SOIL SURVEY

Henry County Tennessee

Series 1948, No. 3

Issued June 1958

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with the
TENNESSEE AGRICULTURAL EXPERIMENT STATION
and the
TENNESSEE VALLEY AUTHORITY

How to Use THE SOIL SURVEY REPORT

THIS REPORT is about the soils of Henry County, Tennessee. It describes each kind of soil and states how it can be used, how it responds to treatment, how to take care of it, and what yields you can expect. The detailed soil maps enclosed in the jacket with this report show the location and extent of each soil. If you want to know how the soils were formed and how they are classified, some information on these subjects will be found in the section Soil Series and their Relations.

SOILS OF A FARM

If you want to know about the soils on a farm or other tract, first find the location on the map. The map shows towns and villages, roads, streams, and other landmarks. Remember that an inch on the map is a quarter of a mile on the ground. Each soil is shown by a symbol, such as Le, and the extent of each area is shown by a boundary line. Color patterns also help you pick out the areas of different soils, although each color pattern is used for several soils that resemble each other in some way.

The map legend shows the soil symbols, arranged in alphabetical order so you can find them easily, and the name of each soil. The symbol Le, for example, is used for Lexington silt loam, undulating phase. All areas of this soil, wherever they appear on the map, are shown by this symbol and in the same color.

Soil names are listed in the table of contents, so you can turn easily to the right page in the section Soil Types, Phases, and Miscellaneous Land Types. This section describes each soil and gives some brief statements about its use and management.

For more detailed information about the management requirements of the soils, turn to the section Soils of Henry County, Interpretation and Use. Under the heading Use and Management of Soils, the soils that are suited to about the same uses and management practices are grouped together. From the table of important soil characteristics in the jacket you can find which group contains Lexington silt loam, undulating phase. The suggestions about crops, rotations, lime, fertilizer, and management practices apply to each soil in this group, including Lexington silt loam, undulating phase.

Yields that you can expect from common crops are given in the yield tables in the management section. These show what yields you can expect in average years if you manage the soil according to the commonly used methods. These tables also show what yields can be expected from the same soil if it is managed by the best methods presently known. These estimates will give you a basis for deciding whether or not the extra yields are worth the extra trouble of improving the management. They will also give you a basis for comparing probable responses from different soils.

SOILS OF THE COUNTY AS A WHOLE

A general idea of the soils is given in the section Soil Associations. This section tells about the principal kinds of soils, where they are found, and how they are related. While reading this section, refer to the soil association map on sheet No. 9 of the large soil map. The patterns shown on this map are likely to indicate well-defined differences in type of farming, land use, and land use problems.

A newcomer to the county, especially if he considers buying land, will want to know about the climate; types and sizes of farms; principal farm products and how they are marketed; kinds and conditions of farm tenure; availability of water, roads, and railroads; and location of towns and population centers. Information about all these will be found in the section General Character of the Area.

This publication on the soil survey of Henry County, Tenn., is a cooperative contribution from the—

SOIL CONSERVATION SERVICE

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TENNESSEE AGRICULTURAL EXPERIMENT STATION

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SOIL SURVEY OF HENRY COUNTY, TENNESSEE

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United States Department of Agriculture in cooperation with the Tennessee Agricultural Experiment Station and the Tennessee Valley Authority

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[1] Field work for this survey was done while the Division of Soil Survey was part of the Bureau of Plant Industry, Soils, and Agricultural Engineering. Soil Survey was transferred to the Soil Conservation Service on November 15, 1952.

HENRY COUNTY was originally covered by a thick hardwood forest. All the forest has been cut over at least once, and much of it has been cleared for farming. Most farms are of the general type. Livestock and livestock products are the most important source of farm income. Tobacco and cotton are the main cash crops. Half of the land of the county is better suited to timber than to crops. Improved management of the forested land is needed, because the policy of removing all the good timber and leaving only cull trees has lowered the value of the forests. The county has few industries besides agriculture and forestry. Kentucky Reservoir, which lies along the eastern boundary of Henry County, is expected to increase income from tourist trade. To provide a basis for use of the land, this soil survey was made cooperatively by the United States Department of Agriculture, the Tennessee Agricultural Experiment Station, and the Tennessee Valley Authority. Field work for this survey was done between 1942 and 1948. About 21,000 acres of the soils originally mapped have been flooded by the filling of Kentucky Reservoir in 1944 and 1945.

GENERAL CHARACTER OF THE AREA

LOCATION AND EXTENT

Henry County is in the northwestern part of Tennessee, next to the Kentucky border and just west of the Tennessee River (fig. 1). The county has an area of 599 square miles, of which 33 square miles are covered by Kentucky Reservoir. Paris, the county seat and principal business center, is centrally located. It is 90 miles from Nashville and 130 miles from Memphis. The chief villages and trading

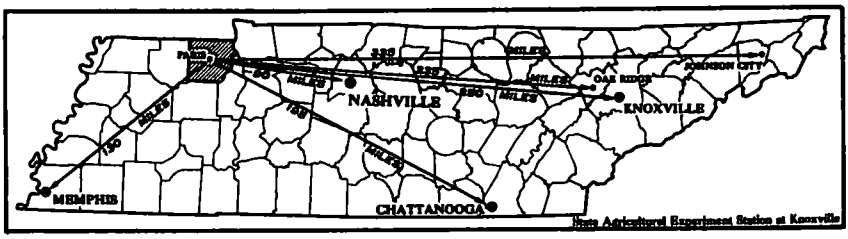

FIGURE 1.—Location of Henry County in Tennessee.

centers in rural areas are Puryear, Whitlock, Henry, Mansfield, Manleyville, Springville, Cottagegrove, Como, and Buchanan.

PHYSIOGRAPHY, RELIEF, AND DRAINAGE

Nearly all of Henry County is in the East Gulf Coastal Plain section of the Coastal Plain physiographic province. The geological formations of this province consist of loose unconsolidated sand, clay, and gravel. The Highland Rim section of the Interior Low Plateau province consists of harder rocks. Although this Highland Rim section lies across the Tennessee and the Big Sandy Rivers from Henry County, a few outcrops of cherty limestone and a very small area of argillaceous limestone show in the county west of these rivers (*12*) [3]. A mantle of windblown silt, up to 6 or 7 feet thick in the western part, covers the smoother areas of the county.

The divide between the watersheds of the Obion River and the Tennessee River crosses Henry County. This divide lies fairly near to the Tennessee River and its tributary, the Big Sandy River. A well-defined escarpment extends along the east side of this divide. Ridge crests range from about 400 to 600 feet above sea level. Paris, the county seat, is on the watershed divide at an elevation of 435 feet.

West of the watershed divide the relief is nearly level, undulating, or rolling. All of the drainage in the western part of the county flows into the Obion River, which enters the Mississippi River outside of Henry County. Principal creeks draining westward are Terrapin, Walnut, Dry, Mill, Clear, Spring, Old Town, Phillips, Rowe, Bird, Lawrence, Guins, Pettijohn, and Brewer Creeks. Most of these empty into the North Fork and the Middle Fork of the Obion River within the county. The streams have low gradients, and their flood plains are broad. Many of the creeks and rivers in this area flow through extensive swamps. Some have been straightened and deepened for drainage canals.

The eastern part of the county, in the Tennessee River watershed, is much more highly dissected. The relief ranges from undulating to hilly or steep. The streams are short and steeper in grade than those flowing westward. The creeks flowing into the Big Sandy River and Kentucky Reservoir are Barnes Fork, West Sandy, Bear, Thompson, Bailey Fork, Clifty, Holly Fork, Cypress, Nelson, Beasley, Clendenin, Gin, Eagle, Beaverdam, Swamp, and Turkeypen Creeks. The Middle Fork of the Clarks River and the Blood River flow out of the county toward the north. Rabbit Creek is a tributary of the Blood

[3] Numbers in parentheses refer to literature cited, page 198.

River. Some of these rivers and creeks are swampy along their lower courses, and drainage canals have been constructed by straightening and deepening the streams.

Broad flood plains and terraces occur along the Big Sandy and Tennessee Rivers. All of the Tennessee River, which formerly formed part of the eastern boundary of Henry County, is now part of Kentucky Reservoir. Kentucky Reservoir is an artificial lake that backed up behind Kentucky Dam, which is on the Tennessee River near its junction with the Ohio River at Paducah, Ky. About 20,904 acres of the low terraces and first bottoms along the Big Sandy and Tennessee Rivers within the county are now flooded. The normal pool level of this reservoir is 359 feet above sea level.

CLIMATE

Henry County has a warm, temperate rainy climate (*10*). Seasonal changes are gradual. Extreme heat or cold is rare. Winters are generally open, short, and mild. Short cold snaps alternate with longer periods of milder temperature. A few inches of snow fall during an average winter. This snow seldom remains on the ground long. The average summer temperature is about 78.4° F. The climate is considered healthful. Table 1 gives normal monthly, seasonal, and annual temperature and precipitation at Paris.

The average annual temperature in 1954 was 59.6° F. and the spread between the average summer and winter temperatures was 38.4°. Temperatures as high as 106° and as low as 22° below zero have been recorded. Soils seldom freeze more than several inches deep and ordinarily thaw out in a few days. Alternate freezing and thawing may cause some heaving and killing of winter crops, especially on the imperfectly drained soils. Damage from frost heaving is not great on better drained or light-textured soils.

The average frost-free period recorded at the Paris Weather Bureau Station is 203 days, or from April 9 to October 29. Killing frosts have been recorded as late as April 21 and as early as October 17. The growing season is usually long enough to mature all crops common to the area. Damage to crops by early fall frosts is not frequent, but some frost injury to corn and cotton is reported occasionally. Some damage to fruit crops results when blossoms open during early warm periods and are later injured by cold and frost. The grazing season extends from about the first of April to the last of November, but some pasture may be obtained during winter.

The average annual precipitation of 51.13 inches is fairly well distributed throughout the year, but it is heavier during winter and spring. Most of the rain comes as light or moderate showers, but heavy downpours can be expected at times. There is enough rainfall to meet the needs of all crops, but much of the water runs off or evaporates. Short dry periods may occur during summer and early in fall, but severe droughts are infrequent. Lack of rain seldom causes crop failures but it reduces yields. Snowfall contributes little moisture. During the 11 years when snowfall was recorded at Paris, the average annual depth was 6.4 inches. Some years may be nearly free of snow.

TABLE 1.—*Normal monthly, seasonal, and annual temperature and precipitation at Paris, Henry County, Tenn.*

[Elevation, 455 feet]

Month	Average temperature	Precipitation [1]		
		Average	Driest year (1941)	In wettest year (1950)
	°F.	*Inches*	*Inches*	*Inches*
December	40. 5	4. 53	2. 95	2. 51
January	38. 2	5. 74	2. 26	13. 55
February	41. 4	4. 19	. 89	6. 65
Winter	40. 0	14. 46	6. 10	22. 71
March	49. 4	5. 47	2. 61	4. 86
April	60. 2	4. 19	2. 14	2. 72
May	67. 8	4. 26	2. 01	7. 76
Spring	59. 1	13. 92	6. 76	15. 34
June	76. 9	3. 97	1. 97	3. 43
July	79. 4	4. 22	7. 57	8. 80
August	78. 9	3. 74	3. 55	5. 14
Summer	78. 4	11. 93	13. 09	17. 37
September	71. 9	3. 40	. 22	9. 52
October	62. 0	3. 35	6. 12	1. 78
November	48. 5	4. 07	2. 75	5. 14
Fall	60. 8	10. 82	9. 09	16. 44
Year	59. 6	51. 13	35. 04	71. 86

[1] Average precipitation and wettest and driest years based on 18-year record, 1937–1954.

Prolonged cloudy and wet periods in winter and spring damage small grains and may reduce yields of summer annual crops by delaying planting. Wet seasons sometimes cause partial crop failure on the more poorly drained soils.

Destructive hailstorms or windstorms are uncommon. The prevailing winds are from the south and southwest. In winter most of the wind comes from the north or northwest.

WATER SUPPLY

Creeks, springs, or wells supply ample water for household use and livestock in most sections. Most of the rural supply is from wells. Many of the smaller intermittent streams and drainageways are an uncertain source of water during dry periods. In some of the hilly, gravelly, or sandy areas where water is not easily obtained,

cisterns for household use and artificial ponds for livestock are common.

Streams of the county are never fully clear. After rains they carry large quantities of fine sediments washed from nearby soils, and they remain muddy for a long time. The trampling of animals keeps the stock ponds muddy most of the year.

VEGETATION

The original vegetation of Henry County was an excellent growth of hardwood trees. Oaks and hickories were most common on the uplands, and there was a small scattering of cedars. Yellow-poplar, dogwood, maple, elm, and sweetgum also grew on the uplands. Sycamore, ash, beech, blackgum, sweetgum, red maple, ironwood, cottonwood, hackberry, locust, hickory, and water oak made up the forests of the bottom lands. In very wet places, cypress, willow, tupelo-gum, and buttonbush were common.

HISTORY, POPULATION, AND COMMUNITY FACILITIES

The county of Henry was organized November 7, 1821, from the Western District of Tennessee and named in honor of Patrick Henry (*6*). The first known settlers arrived in 1819. A few hunters, traders, trappers, and pioneer families were already in the area. Most of the early settlers were from North Carolina, Virginia, and other parts of Tennessee, and a few were from Alabama and Mississippi. They were mostly of English descent but some were Irish, Scotch, or German. Many of the present inhabitants are their descendants.

The population of Henry County has been slowly declining for several decades. The population in 1950 was 23,828, 12 percent less than in 1920. The rural population has been decreasing even more rapidly. The present rural population of 15,002 is only two-thirds of that in 1920. Nevertheless, agriculture is still the occupation of the largest number of people in the county. Paris, the county seat, has a population of 8,826.

All sections of the county have grade schools, most of which are consolidated. High schools are in all the larger centers. Churches are conveniently located in most rural communities.

TRANSPORTATION AND MARKETS

The Louisville and Nashville Railroad and a branch line of the Nashville, Chattanooga, and St. Louis Railroad pass through the county. They connect Paris, Puryear, Henry, Mansfield, and Springville with Memphis, Nashville, Cincinnati, Ohio, and Paducah, Ky. Bus service reaches nearby points and connects with interstate bus lines. Trucking companies haul freight on regular schedules between the principal traffic centers.

Hard-surfaced State and Federal highways connect the more settled sections of the county. Local public roads reach all parts of the county. Rural centers and settlements away from paved highways can be reached by gravelled roads. All the primary county roads are gravelled for year-round travel. Many of the rural roads consist

of improved graded dirt or unimproved dirt roads. These are difficult for car travel when wet.

A large part of the farm produce is marketed in Nashville. Milk is collected from farms and delivered by truck to local dairies or to milk plants in Martin or Mayfield, Ky. Livestock is shipped by rail or truck to Memphis and Nashville. Murray, Ky., is the principal nearby market for tobacco. Some truck crops, poultry products, and fruits are brought into Paris by farmers and sold directly to consumers either at a public market or from house to house.

INDUSTRIES

The most important nonagricultural industry in Henry County is the mining of clay (*9*). Paris, Puryear, and Whitlock are important clay-mining centers. The high-grade clays of this area are shipped to the principal pottery centers of the United States. A pottery in Paris manufactures dinnerware and other ceramic products. Two mills in Paris produce a granulated oil-absorbent from clay of the Porters Creek formation. A plant at Puryear makes bricks, sewer pipe, tiles, and other heavy clay products. The clay-mining companies use few employees.

Gravel is excavated in the county, mostly for local use in surfacing roads and making concrete. There were 47 sawmills in 1946. Small factories make motor parts, rubber articles, shirts, and cosmetics. Several cotton gins located in the county or nearby operate during the cotton harvest. Railroad shops employ a few workers.

Local businesses concerned with recreation and tourist trade are expected to increase in importance as the attractions of Kentucky Reservoir become better known outside of the county.

AGRICULTURE

Henry County is predominantly agricultural. Livestock and many types of crops are produced. The northern part of the county is within an area where general farming and growing of tobacco and sweet potatoes dominate. Cotton and general farming prevail over the southern part (*7*). A corn-and-hog type of farming is practiced in the large stream valleys. Sale of livestock and livestock products is the major source of income for most farms. Many farms produce primarily for home use.

LAND USE

In 1949 a little more than three-fourths of the county was in farms. About 59 percent of this farmland was classified as improved land. Some of the idle lands and pastures are suited to crops, but most of them are best used for pasture. The present trend is to conserve and improve the soils by replacing row crops with sod crops. Table 2 shows the distribution of farmland according to use in stated census years.

Census figures show that the amount of land in farms has decreased 7,467 acres in the period 1929–49, a decrease of only 2.5 percent. Much of this decrease in acreage of farmland was caused by the flooding of the Kentucky Reservoir in 1944 and 1945.

About one-third of the land in the county is in forests, and of this, about half is farm woodland. Companies interested in clay mining control or lease many acres in the western part of the county. Tennessee Valley Authority owned 13,475 acres around Kentucky Reservoir in 1947. Most of this is a game preserve (*9*).

TABLE 2.—*County area and distribution of farmland according to use in Henry County, Tenn., in stated years*

Unit	1929	1939	1949
	Acres	*Acres*	*Acres*
County area		383, 360	383, 360
All land in farms	298, 547	317, 999	291, 080
Cropland harvested	94, 182	102, 337	81, 270
Cropland, idle or fallow, or crop failure	32, 524	35, 589	39, 792
Plowable pasture	37, 476	46, 523	51, 004
Woodland	79, 359	89, 965	82, 844
All other land [1]	55, 006	43, 585	36, 170
Land available for crops (harvested, failure, idle or fallow, and plowable pasture)	164, 182	184, 449	172, 066

[1] This classification includes pasture land other than plowable and woodland pasture, all wasteland, house yards, barnyards, feedlots, lanes, roads, etc.

TYPE, SIZE, AND TENURE OF FARMS

In 1950, there were 2,852 farms in the county, and of this total, 1,023 were miscellaneous and unclassified farms. The remaining farms were classified by principal source of income as follows:

Types of farms:	*Number*
General	596
Livestock	477
Cotton	288
Other field crops	278
Dairy	154
Grain	21
Fruit and nut	10
Poultry	5

In 1950 the average farm in Henry County was about 102 acres in size. The general trend for several decades has been toward a smaller number of farms with a larger average size. In 1950 the 2,852 farms in the county were grouped by size and percentage of total number of farms as follows:

Size of farms:	*Percent*
Less than 29 acres	19. 3
30 to 49 acres	11. 8
50 to 69 acres	13. 3
70 to 99 acres	15. 4
100 to 139 acres	17. 8
140 to 259 acres	16. 9
260 acres or more	5. 5

In 1950, about 81 percent of Henry County farms were operated by owners, a considerable increase over the 60 percent of owner-operated farms recorded in 1930 and 1940. Tenants, who operated about 40 percent of the farms in the period 1930–40, were on nearly 19 percent of the farms in 1950. Less than one percent of the farms have been operated by managers since 1930.

Most of the tenant farms are operated on a share-crop basis. According to the share system usually practiced, the tenant receives some living accomodations and one-third to one-half of the crops he produces.

Farm labor needs are usually met by hiring local workers. Considerable extra labor is hired for picking cotton.

FARM AND HOME IMPROVEMENTS

Nearly all the farm homes in Henry County are built of lumber, and the barns and sheds mostly of rough lumber. The better homes and barns are chiefly on the more productive soils, and the poorer ones on the less fertile soils.

Telephones were reported on 936 farms in 1950, but many homes and some sections of the county are without this service. Electric power is becoming available in all parts of the county as rural electrification systems expand.

CROPS

Although most farmers in Henry County follow a general type of farming, some specialize in dairying and livestock. Feed crops, chiefly corn, lespedeza, and wheat, have been grown for many years. These and many minor crops are used on the farm. Cotton, tobacco, and sweetpotatoes are important cash crops. Table 3 shows the acreage of principal crops and number of bearing fruit trees and grapevines in the county in stated years.

Corn and lespedeza occupy more land than any other crops in the county. Corn is grown on nearly every farm. Most of the crop is used on the farm for livestock feed or household use. Lespedeza is now the main hay crop on most farms and is also an important pasture crop. Red clover, redtop, soybeans, and cowpeas are produced on a number of farms, and alfalfa is gaining in importance.

The acreages of wheat and oats are not large, but these are the important small grains. Only a few acres are planted to barley. Small grains are fed mostly to livestock, but some wheat is used for flour.

Cotton is the most important of the cash crops (pl. 1, *A*). The acreage per farm is small, but most farmers grow some cotton. Dark fire-cured tobacco is the chief cash crop in the north-central part of the county. The acreage of this crop has decreased steadily since about 1920. Sweetpotatoes are grown commercially on a number of farms but are decreasing in importance.

Tree fruits, berries, and potatoes and many other vegetables are grown in home gardens on practically all farms. Few fruits or vegetables are grown on a commercial basis.

TABLE 3.—*Acreage of principal crops and number of bearing fruit trees and grapevines in Henry County, Tenn., for stated years*

Crop	1929	1939	1949
	Acres	*Acres*	*Acres*
Corn, for grain	40, 047	41, 601	35, 870
Small grains threshed:			
Oats	60	178	1, 416
Wheat	777	2, 010	1, 308
Barley	-------	59	872
Soybeans, for all purposes, alone or with other crops	2, 485	15, 016	5, 230
Cowpeas, for all purposes, alone or with other crops	940	3, 579	423
All hay	20, 216	31, 795	20, 727
Timothy and clover, alone or mixed	3, 597	2, 595	3, 643
Lespedeza	(1)	22, 923	14, 589
Alfalfa	196	167	659
Other legumes cut for hay	2, 720	2, 773	(1)
Grains cut green	449	191	356
Other tame grasses	10, 581	2, 475	[2] 1, 480
Wild hay	2, 673	671	(1)
Potatoes, Irish	281	300	[3] 40
Sweetpotatoes	7, 936	4, 242	[3] 1, 775
Tobacco	5, 131	3, 148	1, 764
Cotton	9, 477	9, 991	8, 523
Sorghum, for sirup	596	440	49
	Number	*Number*	*Number*
Apple trees	14, 778	15, 137	13, 046
Peach trees	14, 675	30, 834	9, 557
Other trees	3, 812	6, 034	2, 256
Grapevines	3, 665	5, 151	2, 999

[1] Not reported.
[2] Includes legume hay and wild hay.
[3] Does not include acres for farms with less than 15 bushels harvested.

PASTURES

Pastures are increasingly important in the agriculture of the county. In 1949 about 17.5 percent of the farmland was plowable pasture. Nearly all farms have some pasture land, but on many the quality of the forage is low. Much of the pasture is on soils not well suited to crops, and some has little value even as pasture. A small acreage of woodland is pastured. Most of the permanent pastures are on eroded and sloping soils that are not cropped. These support a poor sod and are usually very weedy. Lespedeza is the most common desirable plant in such pastures. Many areas are idle because they are eroded and the need for pasture has not been great enough to require their reclamation. The quality and carrying capacity of forage on these depleted soils are low. There are some good pastures on poorly drained bottom lands.

Lespedeza is the principal pasture plant, but pastures include redtop, timothy, bermudagrass, orchardgrass, hop clover, whiteclover, alsike clover, meadow fescue, and bluegrasses. Broomsedge and native wild grasses have encroached upon and dominated in many pastures. Many pastures are poorly managed, but some have been improved with fertilizer, lime, new seedings, and controlled grazing.

AGRICULTURAL PRACTICES

Modern machinery is commonly used on the larger farms of the smooth to rolling uplands and stream bottoms. Horse-drawn implements and hand labor are more usual on small farms and in hilly areas. Most small grains, as wheat, rye, oats, and barley, are planted in the fall and harvested in June or July. Crimson clover, vetch, and similar legumes are sown in the fall and plowed under in April or May or harvested for seed in June. Red clover and timothy are sown either in fall or spring.

Corn is generally planted during April or May with one- or two-row planters. Most of the crop is harvested by hand. Tobacco beds are prepared in February or early in March, and the plants are transplanted between the first of May and the early part of June. The plants are usually harvested in September. Cotton is planted early in May and is ready for harvest during the first half of September.

Crops are alternated on almost all farms but not always in any systematic rotation. On upland soils a common short rotation is corn, cotton or a similar row crop, followed by small grain grown for hay. On some of the bottoms and colluvial areas corn is grown for many years in succession or is alternated with a hay crop.

Recently the use of commercial fertilizers and lime has increased. Most of the fertilizer is bought ready-mixed, but a few farmers may do home mixing. Nearly all the fertilizer is bought individually through local dealers. The quantity purchased in 1948 was a little more than 3,000 tons. Both complete and separate fertilizers are used.

There is a trend toward use of higher analysis fertilizers and larger applications per acre. Fertilizers are used most abundantly on cotton, corn, tobacco, and legumes. Commercial fertilizer usually is supplemented by manure. Most of the manure is applied to land plowed for corn. A complete fertilizer mixture is used on tobacco and other crops. Superphosphate is the chief fertilizer used for corn, wheat, and cotton. Application of phosphorus and lime to pasture and hay crops is common.

The value of lime for correcting soil acidity is generally recognized. The use of ground limestone is increasing.

LIVESTOCK AND LIVESTOCK PRODUCTS

Table 4 gives the number of livestock on farms for stated years. Mules are the most common work animals, but horses are used by many farmers. Fewer work animals are used than formerly because there are fewer farms and more tractors. Most of the work animals are medium to small, and many are of inferior quality. Few purebred horses are raised.

Most of the cattle raised are dairy cows. Many are grade stock. Large quantities of dairy products are consumed by farm families, but a considerable proportion is marketed as whole milk, some as cream, and a little as butter. A few farms in the county are classified as dairy farms. Trucks collect milk, much of which is sold on local markets or in nearby towns. Several cream-buying stations are established in the county. Most of the feed for dairy cattle is grown

on the farm. Dairy products are an important, steady source of income for many farm operators.

Beef cattle are raised on many farms. A few operators specialize in purebred animals. Some farms combine dairying and raising of beef cattle. Some animals are bought as feeders when small, grazed during the summer, and finished on corn, hay, and supplemental commercial feeds.

TABLE 4.—*Number of livestock and beehives on farms in Henry County, Tenn., in stated years*

Livestock	1930	1940	1950
	Number	*Number*	*Number*
Horses	2, 734	[1] 2, 758	1, 698
Mules	5, 476	[2] 5, 107	3, 141
Cattle	12, 242	[1] 12, 655	18, 720
Sheep	3, 131	[2] 1, 925	4, 112
Goats	259	[3] 641	[4] 80
Swine	13, 612	[3] 15, 985	25, 996
Chickens	[1] 99, 306	[3] 90, 647	[3] 84, 110
Beehives	770	367	[5] 709

[1] Over 3 months old on April 1.
[2] Over 6 months old on April 1.
[3] Over 4 months old on April 1.
[4] Farms reporting goats, not number of goats.
[5] In 1949.

Very few farmers specialize in sheep raising. Flocks are generally small. Most sheep are raised on the farms, but a few farmers buy sheep or lambs and fatten them for sale.

A few hogs are kept for home use on nearly every farm. An important number are raised for the market. Nashville is the principal market for hogs, but some are sold locally and as breeding stock. Most of the hog feed, mainly corn and legume pasture, is grown on the farm. Many hogs on the larger farms are of purebred stock, but "grades" are common.

Almost every farm has a flock of laying hens. Only a few farmers specialize in raising high-producing poultry. Poultry and eggs contribute a good part of the income for some farmers.

SOIL SURVEY METHODS AND DEFINITIONS

The scientist who makes a soil survey examines soils in the field, classifies the soils in accordance with facts that he observes, and maps their boundaries on an aerial photograph or other map.

Field study.—The soil surveyor bores or digs many holes to see what the soils are like. The holes are not spaced in a regular pattern, but are located according to the lay of the land. Usually they are not more than a quarter of a mile apart, and sometimes they are much closer. In most soils the boring or hole reveals several distinct layers, called horizons, which collectively are known as the soil profile. Each layer is studied to see how it differs from others in

the profile and to learn the things about the soil that influence its capacity to support plant growth.

Color is usually related to the amount of organic matter. The darker the surface soil, as a rule, the more organic matter it contains. Streaks and spots of gray, yellow, and brown in the lower layers generally indicate poor drainage and poor aeration.

Texture, or the content of sand, silt, and clay, is determined by the way the soil feels when rubbed between the fingers and is later checked by laboratory analysis. Texture determines how well the soil retains moisture, plant nutrients, and fertilizer, and whether it is easy or difficult to cultivate.

Structure, which is the way the individual soil particles are arranged in larger grains, and the amount of pore space between grains, gives us clues to the ease or difficulty with which the soil is penetrated by plant roots and by moisture.

Consistence, or the tendency of the soil to crumble or to stick together, indicates whether it is easy or difficult to keep the soil open and porous under cultivation.

Reaction, or the degree of acidity or of alkalinity of the soil, can be expressed mathematically as the pH value. A pH value of 7 indicates precise neutrality; higher values, alkalinity; and lower values, acidity. The degree of acidity or alkalinity is expressed in words and pH values as follows (*11*):

	pH		*pH*
Extremely acid	Below 4.5	Neutral	6. 6–7. 3
Very strongly acid	4. 5–5. 0	Mildly alkaline	7. 4–7. 8
Strongly acid	5. 1–5. 5	Moderately alkaline	7. 9–8. 4
Medium acid	5. 6–6. 0	Strongly alkaline	8. 5–9. 0
Slightly acid	6. 1–6. 5	Very strongly alkaline	9. 1 or higher

Simple chemical tests in the field show how acid the soil may be. These may be checked in the laboratory.

Other characteristics which may be observed in the course of the field study and considered in classifying the soil are the following: The depth of the soil to bedrock, cemented or compact layers, or loose gravel strata; the presence of gravel or stones in amounts that will interfere with cultivation; the steepness and pattern of slopes and the degree of erosion; the surface runoff of water, drainage through the soil, and occurrence of a high ground-water table; and the nature of the underlying rocks or other parent material from which the soil has developed.

Classification.—On the basis of the characteristics observed by the survey team or determined by laboratory tests, soils are classified into phases, types, and series. The soil type is the basic classification unit. A soil type may consist of several phases. Types that resemble each other in most of their characteristics are grouped into soil series.

Soil type.—Soils similar in kind, thickness, and arrangement of soil layers are classified as one soil type.

Soil phase.—Because of differences other than those of kind, thickness, and arrangement of layers, some soil types are divided into two or more phases. Slope variations, frequency of rock outcrops, degree of erosion, depth of soil over the substratum, type of drainage (natural or artificial), and degree of erosion are examples of characteristics that suggest dividing a soil type into phases.

The soil phase (or the soil type if it has not been subdivided) is the unit shown on the soil map. It is the unit that has the narrowest range of characteristics. Use and management practices therefore can be specified for the soil phase more easily than for soil series or yet broader groups that contain more variation.

Soil series.—Two or more soil types that differ in surface texture, but that are otherwise similar in kind, thickness, and arrangement of soil layers, are normally designated as a soil series. In a given area, however, it frequently happens that a soil series is represented by only one soil type. Thus, Memphis is the name of a soil series that was formed in thick layers of wind-deposited silt that overlie sandy Coastal Plain materials in the uplands of Henry County. This series was first described and classified near the city of Memphis.

Miscellaneous land types.—Steep eroded hillsides, land so gullied that most of the original soil is gone, and excavated or built-up land have little or no true soil. They cannot be classified into types and series, but are identified by descriptive names such as Hilly eroded land, Coastal Plain material; or Gullied land, Cuthbert and Dulac soil materials; or Mines, pits, and dumps.

Soil complexes.—When two or more soils are so intricately associated in small areas that it is not practical to show them separately on the soil map, they are mapped together and called a soil complex. The Guin-Brandon soils and the Lexington-Ruston soils are soil complexes mapped in this county.

THE SOILS OF HENRY COUNTY, DESCRIPTION AND CLASSIFICATION

SOIL SERIES AND THEIR RELATIONS

The relationships among soil series are more readily understood if they are grouped according to position in the landscape. Table 5 shows the position in the landscape, parent material, and drainage for each soil series.

In parentheses, following the series name, is a symbol showing to which great soil group the series belongs (*2*). The miscellaneous land types are not shown in table 5, because these land types are not classified by soil series.

SOILS OF THE UPLANDS

The soils of the uplands are in the hills above the stream valleys. This group is made up of these series:

Bodine	Lax
Brandon	Lexington
Calloway	Loring
Center	Memphis
Cuthbert	Mountview
Dulac	Providence
Grenada	Routon
Guin	Ruston
Henry	Tippah

The soils of these series have developed from materials weathered from the underlying geologic formations. Their properties generally

vary according to the rock material from which the parent materials have weathered.

Three types of geologic material have contributed to the soils of Henry County—unconsolidated loess (windblown silt), unconsolidated Coastal Plain formations, and cherty limestone.

As shown in table 5, the soils of the upland are placed in four subgroups according to the kind of parent materials from which they developed.

SOILS DERIVED FROM MODERATELY DEEP LOESS.—This group is made up of soils of the Memphis, Loring, Center, Grenada, Calloway, Henry, and Routon series. All of these soils have developed from a layer of silty material, 3½ to 7 feet thick, that the wind deposited on broad ridges and other nearly level to rolling areas. Differences among the soils vary with differences in drainage and in material beneath the silt layer.

MEMPHIS: Well-drained soils that have reddish-brown to yellowish-red friable subsoils.

GRENADA: Moderately well drained soils that have yellowish-brown or strong-brown to brownish-yellow subsoils, mottled in the lower part, and strongly developed, slowly pervious hardpans.

LORING: Soils that have the same drainage and coloring as Grenada soils, but have incipient hardpans.

CENTER: Imperfectly drained soils that have light yellowish-brown to brownish-yellow mottled subsoils and distinct hardpans.

CALLOWAY: Soils that have the same drainage as Center soils, but surface layers are not so brown and the distinct hardpans of the Center soils are lacking.

HENRY: A poorly drained soil, light colored throughout, that has a distinct hardpan at depths of 18 inches to 2 feet.

ROUTON: Soils of the same drainage and coloring as Henry soils, but hardpans are very weak or missing.

SOILS DERIVED FROM SHALLOW LOESS.—In this physiographic group are soils of the Lexington, Brandon, Mountview, Providence, Dulac, Tippah, and Lax series. They were derived from a mantle of blown silt less than 42 inches thick. Most of them are undulating to rolling.

LEXINGTON: Well-drained soils that have strong-brown to reddish-brown or yellowish-red friable subsoil over permeable sandy Coastal Plain materials.

BRANDON: Well-drained soils that have profiles similar to those of the Lexington soils, but underlain by thick beds of permeable gravel.

MOUNTVIEW: Well-drained soils that have friable subsoils and were developed from a very shallow layer of loess underlain by cherty limestone. They are lighter in color than the Lexington and Brandon soils.

PROVIDENCE: Moderately well drained soils that have yellowish-brown to brownish-yellow friable subsoils and also have siltpans at a depth of about 2 feet. These soils are underlain by relatively permeable sandy Coastal Plain material.

DULAC: Soils whose drainage and subsoil are like those of Providence soils, but the siltpans are thicker and more compact. Material underlying the loess from which the Dulac soils developed is slowly permeable Coastal Plain sandy clay.

TIPPAH: Soils that have drainage, subsoil, and siltpan like those of the Providence soils, but they are underlain by very slowly permeable Coastal Plain clay.

LAX: Soils like the Providence soils in drainage, subsoil, and siltpan, but they have cemented layers of gravel beneath.

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TABLE 5.—*Soil series of Henry County, Tenn., grouped by topographic position, parent material, and drainage*

[Great soil groups are shown by letters following series names: G=Gray-Brown Podzolic; P=Planosol; R=Red-Yellow Podzolic; L=Lithosol; A=Alluvial soil]

Position and parent material	Excessively drained	Well drained	Moderately well drained	Imperfectly drained	Poorly drained
Soils of the uplands:					
1. Moderately deep loess (unconsolidated wind deposits):					
Silt, permeable sandy Coastal Plain material below 3½ to 7 feet.	----------	Memphis (G), Loring (G)	Loring (G)	Center (P)	Routon (P).
Silt, slowly permeable sandy Coastal Plain material below 3½ to 7 feet.	----------	Loring (G)	Grenada (P), Loring (G)	Calloway (P)	Henry (P).
2. Shallow loess (unconsolidated wind deposits):					
Silt, permeable sandy Coastal Plain material below 20 to 42 inches.	----------	Lexington (R)	Providence (R)	----------	----------
Silt, slowly permeable sandy clay below 20 to 42 inches.	----------	----------	Dulac (P)	----------	----------
Silt, impermeable clay below 20 to 42 inches.	----------	----------	Tippah (P)	----------	----------
Silt, stratified beds of gravel below 20 to 42 inches.	----------	Brandon (R)	Lax (P)	----------	----------
Silt, cherty limestone below 10 to 25 inches.	----------	Mountview (R)	----------	----------	----------
3. Unconsolidated Coastal Plain formations:					
Sandy friable Coastal Plain material.	----------	Ruston (R)	----------	----------	----------
Gravel, mostly cherty material	Guin (L)	Guin (L)	----------	----------	----------
Sandy clay, interbedded with thin clay lenses.	Cuthbert (L)	Cuthbert (L)	----------	----------	----------
4. Consolidated limestone formations:					
Cherty limestone	Bodine (L)	Bodine (L)	----------	----------	----------

Soils of the stream terraces and old colluvial lands:					
1. Old local alluvium, chiefly from loess and Coastal Plain material:					
Loess over alluvium, chiefly Coastal Plain material (high terraces).	----------	Dexter (R)-----	Freeland (P)----	Hatchie (P)-----	Almo (P).
2. Old general and local alluvium of limestone and other material:					
Loess over alluvium, chiefly limestone material (high terraces).	----------	----------	Paden (P)------	Taft (P)--------	Robertsville (P).
Mixed alluvium, chiefly limestone material (low terraces).	----------	Wolftever (P)---	Wolftever (P)---	Taft (P)--------	Robertsville (P).
Mixed alluvium, chiefly sandy material (low terraces).	----------	Sequatchie (R)--	----------	----------	----------
Soils of the young colluvial lands:					
1. Colluvial-local alluvial material:					
Mixed loessial and Coastal Plain materials.	----------	Tigrett (A)-----	{Tigrett (A)----- Briensburg (A)--}	Briensburg (A)--	Dyer (A).
Cherty limestone material----------	----------	Greendale (A)---	Greendale (A)---	----------	----------
Soils of the bottom lands (stream flood plains):					
1. Alluvium, chiefly loess and Coastal Plain material:					
Mixed loessial and Coastal Plain materials.	----------	Shannon (A)----	{Hymon (A)----- Shannon (A)----}	Hymon (A)-----	Beechy (A).
2. Alluvium from a variety of materials, including limestone:					
Mixed alluvium, chiefly limestone material.	----------	Huntington (A)-	{Huntington (A)- Lindside (A)----}	Lindside (A)----	Melvin (A).
Mixed alluvium, chiefly limestone material (slack water deposits).	----------	Egam (A)------	Egam (A)------	----------	----------
3. Alluvium, chiefly cherty limestone:					
Chiefly cherty limestone material, some mixture of loess.	----------	Ennis (A)------	{Ennis (A)------ Lobelville (A)---}	Lobelville (A)---	Melvin (A).

SOILS DERIVED FROM UNCONSOLIDATED COASTAL PLAIN FORMATIONS.—This group consists of Ruston, Cuthbert, and Guin soils, which differ according to differences in parent materials.

RUSTON: Soils derived from sands; they have loose sandy surface layers and friable yellowish-red or red subsoils and substrata.

CUTHBERT: Soils developed from light-colored beds of clay interspersed with sands and sandy clay. The grayish-yellow, brownish-yellow, or yellow sandy surface layers are underlain by reddish-yellow to yellowish-red plastic sandy clay or clay that becomes mottled gray, yellow, and brown with depth.

GUIN: Soils derived from gravel, which is present in all layers. Soils have loose, very friable, light-colored surface layers and very friable yellowish-brown or brownish-yellow subsoils.

SOILS DERIVED FROM CONSOLIDATED LIMESTONE FORMATIONS.—This group has only one soil series, the Bodine soils. Bodine soils were developed from cherty limestone on highly dissected uplands. These soils are shallow and have a great many angular chert fragments on the surface and through the profile. The texture profile is weakly developed.

MISCELLANEOUS LAND TYPES.—This group consists of areas of land on which true soils have not formed or have been recently destroyed. The three types of Gullied land are former soil types that have almost lost their identity as the result of very severe erosion and gullying. Other miscellaneous land types are such a complex association of many soils that it is not practical to separate the soils into individual mapping units. Following are the land types mapped in this county:

GULLIED LAND, MEMPHIS SOIL MATERIAL: Silty areas which were soils of the Memphis series before they were destroyed by gullies and severe erosion.

GULLIED LAND, RUSTON SOIL MATERIAL: Ruston soils from which the original profiles have been washed away by erosion. The remaining material is sandy.

GULLIED LAND, CUTHBERT AND DULAC SOIL MATERIALS: Areas that were originally either Cuthbert or Dulac soils, but so much of the profiles have been destroyed that the two series hardly can be distinguished. The material is sandy clay or clay.

GULLY WASH: Areas where the material washed from gullied land has accumulated. No profile has had time to form.

HILLY LAND, COASTAL PLAIN MATERIAL: A complex of many soils formed from outcrops or exposures of various thin-bedded Coastal Plain formations on strong slopes.

MADE LAND: Areas which man has covered with soil or other material.

MINES, PITS, AND DUMPS: Excavations and other places where man has removed the soil profile.

SOILS OF THE STREAM TERRACES AND OLD COLLUVIAL LANDS

These soils lie on terraces, second bottoms, or benches. The following series are represented:

Almo	Robertsville
Dexter	Sequatchie
Freeland	Taft
Hatchie	Wolftever
Paden	

In the past, the rivers and streams of the county flowed at considerably higher levels. At those levels, silt, clay, sand, and gravel were deposited over their flood plains. As the stream channels gradually deepened, new flood plains formed at lower levels, but

remnants of the older higher flood plains were left. These flood plains consist of old alluvium that ordinarily lies above the high-flood levels of the streams. However, the filling of Kentucky Reservoir has flooded some of these soils, including all of the Sequatchie and Wolftever series.

The soils of this group are divided into two subgroups according to differences in origin of their parent materials.

SOILS DERIVED FROM OLD LOCAL ALLUVIUM CHIEFLY FROM LOESS AND COASTAL PLAIN MATERIAL.—This group consists of members of the Dexter, Freeland, Hatchie, and Almo series. The soils occur mostly on high terraces of the larger streams that, except for the Big Sandy River, originate within this county. The old mixed alluvium of these terraces is composed principally of silt, sand, and clay washed from nearby loessial and Coastal Plain soils. Most areas have a thin layer of loess overlying these sediments. The differences among the soils have resulted mainly from variations in drainage.

DEXTER: Well-drained soils that have reddish subsoils.
FREELAND: Moderately well drained soils that have brownish-yellow or yellowish-brown subsoils and siltpans at a depth of about 2 feet.
HATCHIE: Imperfectly drained soils that have pale-yellow or light yellowish-brown mottled subsoils and strongly developed siltpans.
ALMO: A poorly drained soil that is predominantly light gray throughout the profile.

SOILS DERIVED FROM OLD GENERAL AND LOCAL ALLUVIUM OF LIMESTONE AND OTHER MATERIAL.—Soils of the Paden, Wolftever, Taft, Robertsville, and Sequatchie series are in this group. The soils have developed from old alluvium that was washed from uplands. The alluvium came mostly from limestone, but included sandstone, shale, loess, and Coastal Plain sands and clays.

PADEN: Soils on high terraces of the Tennessee River. The terraces were covered with a thin layer of loess in most places. These moderately well drained soils have yellowish-brown or brownish-yellow subsoils that are mottled in the lower part. Siltpans are at a depth of about 2 feet.
TAFT: Imperfectly drained soils that have pale-yellow or light yellowish-brown mottled subsoils and strongly developed siltpans. These soils lie on both the high and the low terraces of the Tennessee River. A thin layer of loess covered most of the high terraces.
ROBERTSVILLE: A soil developed on both the high and the low terraces of the Tennessee River. A thin layer of loess covered the high terraces in most places. The soil is poorly drained and predominantly light gray throughout.
SEQUATCHIE: A sandy, brown, well-drained soil on the younger and lower terraces. It was subject to occasional overflow.
WOLFTEVER: Moderately well drained soils that had silt loam surface soils and compact yellowish-brown or brownish-yellow subsoils. They lay on the younger and lower terraces and were occasionally overflowed.

SOILS OF THE YOUNG COLLUVIAL LANDS

Soils of this group lie along small drainageways, sloping fans, and on benches at the base of slopes, especially the longer, steeper, and more eroded slopes. The following series are represented:

Briensburg
Dyer
Greendale
Tigrett

The parent materials of these soils are soil material and rock fragments that were washed and rolled from adjoining slopes. Differences between these series depend on differences in drainage and in origin of parent material.

TIGRETT: Brown, friable, well-drained soils. Their parent material is mixed local alluvium and colluvium washed from upland soils that have developed from loess and Coastal Plain material.

BRIENSBURG: Soils that have the same parent material as the Tigrett series, but are imperfectly drained. They have grayish-brown or brown surface layers and are strongly mottled below depths of 10 to 18 inches.

DYER: Soils having parent material like that of the Tigrett and Briensburg soils. Dyer soils, however, are poorly drained and light colored.

GREENDALE: Grayish-brown to brown soils that are well to moderately well drained. They have many chert fragments on their surface and in the soil layers. The parent material has washed mainly from cherty Bodine soils, but it includes some silty material from Mountview soils.

SOILS OF THE BOTTOM LANDS (STREAM FLOOD PLAINS)

The bottom lands are the flood plains or nearly level areas of soil along streams. They are subject to overflow. The following series are in this county:

Beechy	Lindside
Egam	Lobelville
Ennis	Melvin
Huntington	Shannon
Hymon	

The parent material of bottom-land soils has been deposited by streams. The source of the sediment and the sorting action of the water determine the type of parent material from which the soils have developed. The soils in the bottoms are young. The material from which they are developing has not been in place long enough for formation of well-defined surface and subsoil layers, such as those that have formed in most of the terrace and upland soils. The Egam and Huntington series have been flooded by Kentucky Reservoir.

Bottom-land soils in this county may be divided into three subgroups according to differences in parent material.

SOILS DERIVED FROM ALLUVIUM, CHIEFLY LOESS AND COASTAL PLAIN MATERIAL.—This group is comprised of the Shannon, Hymon, and Beechy series. These soils are on flood bottoms along streams. They were developed from mixed sediments, which washed from soils derived from Coastal Plain materials and loess within the county.

SHANNON: Well-drained, brown, friable soils.

HYMON: Imperfectly drained soils that have grayish-brown or brown surface soils but are extremely mottled below depths of 8 to 15 inches.

BEECHY: Poorly drained soils that are predominantly gray throughout their profile.

SOILS DERIVED FROM ALLUVIUM FROM A VARIETY OF MATERIALS, INCLUDING LIMESTONE.—The soil series in this group are the Huntington, Egam, Lindside, and Melvin. They lie mainly on flood plains of the Tennessee River. Nearly all of them are now flooded by Kentucky Reservoir. These soils are from mixed materials, but sediments from limestone areas form a large part of the mixture.

HUNTINGTON: Brown, friable, well-drained soils that occurred chiefly on low first bottoms.

EGAM: A dark grayish-brown soil that was moderately well drained. It had compact subsoils and was usually on high first bottoms.
LINDSIDE: Imperfectly drained soils that have mottled subsoils.
MELVIN: Poorly drained light-gray soils.

SOILS DERIVED FROM ALLUVIUM CHIEFLY OF CHERTY LIMESTONE.—The Ennis and Lobelville series are in this group. The parent materials of these soils were washed chiefly from areas of cherty Bodine soils, but they have been modified by mixture with materials from Mountview and other silty soils.

ENNIS: These are light-brown or brown friable well-drained soils that have varying amounts of chert fragments over the surface and through the profile.
LOBELVILLE: Grayish-brown or brownish-gray imperfectly drained soils, mottled below a depth of about 12 inches.

SOIL TYPES, PHASES, AND MISCELLANEOUS LAND TYPES

On the following pages the soil types, phases, and miscellaneous land types of Henry County are described. Suggestions for their management and use have been included. For more information about the management of these soils, see the section Soils of Henry County, Interpretation and Use.

The approximate acreage and proportionate extent of the mapping units are listed in table 6. The soils were mapped before the filling of Kentucky Reservoir. The acreage that is now covered by the reservoir is listed separately. The location and distribution of the soils are shown on the soil map that accompanies this report.

TABLE 6.—*Approximate acreages and proportionate extent of the soils mapped in Henry County, Tenn.*

Soils	Above reservoir		Flooded by reservoir	Total
	Acres	*Percent of county area*	*Acres*	*Acres*
Almo silt loam	1,406	0.4	523	1,929
Beechy silt loam	19,130	5.0	3,003	22,133
Swamp phase	331	.1	3,627	3,958
Beechy fine sandy loam	1,615	.4	362	1,977
Beechy loamy sand, overwash phase	136	(1)	----	136
Bodine cherty silt loam:				
Hilly phase	805	.2	16	821
Eroded hilly phase	271	.1	14	285
Steep phase	276	.1	19	295
Rolling phase	300	.1	14	314
Brandon silt loam:				
Undulating phase	670	.2	----	670
Eroded undulating phase	1,021	.3	----	1,021
Rolling phase	642	.2	----	642
Eroded rolling phase	341	.1	----	341
Brandon silty clay loam, severely eroded rolling phase	886	.2	----	886
Briensburg silt loam	10,113	2.6	190	10,303
Briensburg fine sandy loam	3,869	1.0	88	3,957

See footnotes at end of table.

TABLE 6.—*Approximate acreages and proportionate extent of the soils mapped in Henry County, Tenn.*—Continued

Soils	Above reservoir		Flooded by reservoir	Total
	Acres	*Percent of county area*	*Acres*	*Acres*
Calloway silt loam:				
Level phase	1,058	0.3		1,058
Undulating phase	176	(1)		176
Eroded undulating phase	272	.1		272
Center silt loam:				
Level phase	1,011	.3		1,011
Undulating phase	779	.2		779
Eroded undulating phase	500	.1		500
Dexter silt loam:				
Undulating phase	406	.1	14	420
Eroded undulating phase	925	.2	16	941
Rolling phase	184	(1)	10	194
Eroded rolling phase	321	.1	22	343
Dexter silty clay loam, severely eroded rolling phase	665	.2	24	689
Dexter fine sandy loam, hilly phase	210	.1	16	226
Dulac silt loam:				
Undulating phase	609	.2		609
Eroded undulating phase	4,045	1.1	5	4,050
Rolling phase	1,986	.5	5	1,991
Eroded rolling phase	2,557	.7	23	2,580
Dulac silty clay loam, severely eroded rolling phase	6,747	1.8	19	6,766
Dulac-Cuthbert complex:				
Hilly phases	856	.2		856
Eroded hilly phases	249	.1		249
Severely eroded hilly phases	439	.1		439
Dyer silt loam	489	.1	13	502
Dyer fine sandy loam	125	(1)		125
Egam silty clay loam			548	548
Ennis silt loam	24	(1)	92	116
Freeland silt loam:				
Level phase	225	.1		225
Undulating phase	1,425	.4	141	1,566
Eroded undulating phase	4,124	1.1	121	4,245
Rolling phase	554	.1	26	580
Eroded rolling phase	911	.2	54	965
Freeland silty clay loam, severely eroded rolling phase	2,037	.5	34	2,071
Greendale cherty silt loam	171	(1)	69	240
Grenada silt loam:				
Level phase	3,210	.8		3,210
Undulating phase	480	.1		480
Eroded undulating phase	5,793	1.5		5,793
Guin gravelly loam, steep phase	876	.2		876
Guin-Brandon soils:				
Rolling phases	211	.1		211
Eroded rolling phases	154	(1)	1	155
Hilly phases	6,372	1.7		6,372
Eroded hilly phases	589	.2		589
Severely eroded hilly phases	1,190	.3		1,190

See footnotes at end of table.

TABLE 6.—*Approximate acreages and proportionate extent of the soils mapped in Henry County, Tenn.*—Continued

Soils	Above reservoir		Flooded by reservoir	Total
	Acres	Percent of county area	Acres	Acres
Gullied land:				
Cuthbert and Dulac soil materials	402	0.1		402
Memphis soil material	924	.2		924
Ruston soil material	3,385	.9		3,385
Gully wash	213	.1		213
Hatchie silt loam:				
Level phase	1,638	.4	409	2,047
Undulating phase	800	.2	46	846
Eroded undulating phase	789	.2	72	861
Hatchie fine sandy loam:				
Level phase	185	(1)	225	410
Undulating phase	106	(1)	16	122
Henry silt loam	859	.2		859
Hilly land, Coastal Plain material	720	.2		720
Hilly eroded land, Coastal Plain material	529	.1		529
Huntington silt loam			533	533
Huntington fine sandy loam			367	367
Hymon silt loam	4,932	1.3	477	5,409
Hymon fine sandy loam	3,344	.9	169	3,513
Hymon and Beechy silt loams	18,453	4.8	72	18,525
Hymon and Beechy fine sandy loams	4,350	1.1	47	4,397
Lax silt loam:				
Undulating phase	182	(1)		182
Eroded undulating phase	357	.1		357
Rolling phase	130	(1)		130
Lax silty clay loam, severely eroded rolling phase	1,087	.3		1,087
Lexington silt loam:				
Undulating phase	2,820	.7		2,820
Eroded undulating phase	15,905	4.1		15,905
Rolling phase	5,403	1.4	1	5,404
Eroded rolling phase	6,930	1.8	6	6,936
Hilly phase	3,037	.8		3,037
Eroded hilly phase	1,345	.4		1,345
Lexington silty clay loam:				
Severely eroded rolling phase	29,582	7.7	6	29,588
Severely eroded hilly phase	4,407	1.1		4,407
Lexington–Ruston soils:				
Rolling phases	919	.2	13	932
Eroded rolling phases	1,119	.3	5	1,124
Severely eroded rolling phases	1,907	.5		1,907
Hilly phases	7,374	1.9	1	7,375
Eroded hilly phases	4,048	1.1		4,048
Severely eroded hilly phases	9,358	2.4		9,358
Lindside and Lobelville silt loams	114	(1)	731	845
Loring silt loam:				
Level phase	1,060	.3		1,060
Undulating phase	448	.1		448
Eroded undulating phase	9,925	2.6		9,925
Rolling phase	115	(1)		115
Eroded rolling phase	644	.2		644

See footnotes at end of table.

TABLE 6.—*Approximate acreage and proportionate extent of the soils mapped in Henry County, Tenn.*—Continued

Soils	Above reservoir		Flooded by reservoir	Total
	Acres	Percent of county area	Acres	Acres
Loring silty clay loam, severely eroded rolling phase	3,249	0.8		3,249
Made land	31	(1)		31
Melvin and Beechy silt loams	40	(1)	3,311	3,351
Memphis silt loam:				
Level phase	4,880	1.3		4,880
Undulating phase	1,189	.3		1,189
Eroded undulating phase	43,464	11.3		43,464
Rolling phase	203	.1		203
Eroded rolling phase	1,456	.4		1,456
Memphis silty clay loam, severely eroded rolling phase	3,853	1.0		3,853
Mines, pits, and dumps	249	.1	8	257
Mountview silt loam:				
Rolling shallow phase	177	(1)	1	178
Eroded rolling shallow phase	123	(1)	3	126
Hilly shallow phase	805	.2	19	824
Paden silt loam:				
Eroded undulating phase	223	.1	19	242
Rolling phase	310	.1	1	311
Eroded rolling phase	200	.1	1	201
Paden silty clay loam, severely eroded rolling phase	129	(1)	8	137
Providence silt loam:				
Undulating phase	595	.2		595
Eroded undulating phase	4,078	1.1		4,078
Rolling phase	1,610	.4	3	1,613
Eroded rolling phase	2,124	.6	6	2,130
Providence silty clay loam, severely eroded rolling phase	6,158	1.6	9	6,167
Robertsville silt loam	34	(1)	1,820	1,854
Routon and Henry silt loams	2,279	.6		2,279
Ruston fine sandy loam:				
Rolling phase	226	.1		226
Eroded rolling phase	1,037	.3		1,037
Severely eroded rolling phase	105	(1)		105
Hilly phase	11,619	3.0	10	11,629
Eroded hilly phase	7,552	2.0	10	7,562
Severely eroded hilly phase	1,991	.5	10	2,001
Steep phase	1,878	.5		1,878
Sequatchie fine sandy loam			493	493
Shannon silt loam	1,396	.4	211	1,607
Shannon fine sandy loam	387	.1	140	527
Taft silt loam	40	(1)	1,200	1,240
Tigrett silt loam	7,554	2.0	48	7,602
Tigrett fine sandy loam	4,041	1.1	30	4,071
Tippah silt loam:				
Eroded undulating phase	336	.1		336
Rolling phase	131	(1)		131
Eroded rolling phase	329	.1		329
Tippah silty clay loam, severely eroded rolling phase	801	.2		801

See footnotes at end of table.

TABLE 6.—*Approximate acreage and proportionate extent of the soils mapped in Henry County, Tenn.*—Continued

Soils	Above reservoir		Flooded by reservoir	Total
	Acres	*Percent of county area*	*Acres*	*Acres*
Wolftever silt loam	--------	--------	1, 061	1, 061
Wolftever silty clay loam, eroded phase	--------	--------	177	177
Totals	361, 494	94. 2	[2] 20, 901	382, 398
Water (before reservoir)	--------	--------	--------	962
Area of county	--------	--------	--------	383, 360

[1] Less than 0.1 percent. [2] 5.7 percent of county area.

Almo silt loam (0 to 2 percent slopes) (Al, 12).[3]—This is a poorly drained, light-colored, nearly level soil on stream terraces. Locally, the soil is called crawfish land or white land. It has formed from old mixed alluvium that washed from upland soils derived from loess or Coastal Plain materials. Many areas are in slight depressions. Surface runoff is slow and water stands in many places. Internal drainage is slow. Almo silt loam is the most poorly drained member of the Dexter-Freeland-Hatchie-Almo group of soils. It is associated with them on the broader terraces of the Big Sandy River and branches of the Obion River. The native trees consisted of such water-tolerant hardwoods as water oak, sweetgum, blackgum, soft maple, birch, ash, and willow.

Profile description:[4]

0 to 6 inches, gray, light-gray, or brownish-gray very friable silt loam or silt; a few faint strong-brown splotches or mottles; 5 to 8 inches thick.

6 to 18 inches, light-gray friable silt loam that has a few medium distinct strong-brown mottles; 10 to 15 inches thick.

18 to 34 inches, light-gray compact heavy silt loam, silty clay loam, or silty clay; distinct, medium, strong-brown mottles are common; the upper part of the layer is usually more compact than the lower part; 14 to 20 inches thick.

34 inches +, light-gray, light yellowish-brown, or brownish-yellow moderately firm or friable silt loam or silty clay loam having many gray, yellow, and brown mottles; has thin stratified layers of sandy material in places.

Small rounded concretions are on the surface and in the soil layers, but mostly in the lower subsoil. The soil is strongly to very strongly acid throughout and very low in organic matter. It apparently lacks essential minerals, especially potassium. The upper part of the soil is moderately permeable to roots, air, and moisture,

[3] Letters are the map symbol for the soil; the figure following the comma is the management group in which the soil has been placed.

[4] In these soil profiles the description of each layer begins with the usual depth in inches of its top and bottom from the mineral surface of the soil; the common range in thickness of the layer is given at the end of the description for each layer.

but the pan layer is very slowly permeable. The soil has a low water-supplying capacity.

A few areas of Hatchie and Freeland soils, too small to be shown separately on the soil map, were put into this unit.

Use and management.—Most of Almo silt loam is cleared, but a small acreage remains as woodland. The farmed areas are chiefly in hay or pasture. Some are used for corn along with adjoining soils. On many farms the soil is idle and covered with weeds and vegetation that have little value for pasture. It is seldom used for row crops.

Almo silt loam is not considered suitable for the common field crops. Poor drainage, compaction of the subsoil, low supplies of organic matter, and low fertility limit its suitability for use. It dries out and warms up very slowly in spring or after a rainy period. Some areas receive seepage water from higher slopes during much of the year.

Preparing and planting a seedbed is frequently so delayed in the spring that the crop does not mature properly in the fall. Because of the low water-supplying capacity, crops are seriously injured by extended droughts. Yield averages are low and crop failures are common. In favorable seasons, however, fair yields of soybeans, sorghum, and lespedeza can be obtained. Small grains seeded in the fall may be damaged by wetness and the alternate freezing and thawing during winter. At the right moisture content, the soil would be moderately easy to cultivate, conserve, and keep in satisfactory tilth.

If the soil were properly drained, it would be adapted to the same crops as Hatchie silt loam. Crops produce more on drained areas, but yields are still moderately low because of the low water-supplying capacity and low fertility. The nearly level relief, compact subsoil, and location make some areas hard to drain.

The soil is probably best used for pasture. Without fertilizer or lime, the pasture is of low quality and produces low yields. With proper use of amendments, such pasture plants as lespedeza, bermudagrass, alsike clover, white or Ladino clover, and fescue are successfully grown.

Beechy silt loam (0 to 2 percent slopes) (Bh, 13).—This is a poorly drained light-colored soil of the first bottoms. Locally, it is called crawfish land because of the numerous crawfish chimneys. It has formed from mixed alluvial materials that washed from upland soils developed mainly from loess and partly from Coastal Plain sands and clays. This soil is the poorly drained member of the Shannon-Hymon-Beechy group. Surface relief is nearly level in most areas.

The mixed hardwood vegetation consists of water-tolerant oaks, sweetgum, blackgum, beech, birch, willow, ash, and soft maple. Beechy silt loam is the most extensive of the bottom soils. It is widely distributed in the bottoms of Big Sandy, Blood, and Obion Rivers and their main tributaries. The areas are large and are associated with Hymon soils and other types and phases of the Beechy series.

Profile description:

0 to 6 inches, gray or brownish-gray mellow very friable silt loam having a few strong-brown splotches; 0 to 12 inches thick.

6 to 35 inches, gray, light-gray, or very pale brown friable silt loam or heavy silt loam showing irregular splotches of strong brown and light gray; 15 to 35 inches thick.

35 inches +, light-gray or gray friable silt loam having strong-brown mottles; in some places stratified into thin beds of silt loam, sand, silty clay, and clay; 2 to 10 or more feet thick.

Some concretions occur throughout the soil, but they are most numerous in the subsoil. The soil is strongly to very strongly acid throughout, low in organic matter, and moderately low in fertility. It is overflowed periodically, and the water table is close to or at the surface during much of the year. Although the soil is permeable, the root systems of plants are near the surface.

Next to some of the stream channels and scattered over the soil in many other places are thin irregular deposits of light-brown or grayish-brown friable silt loam material about 1 to 6 inches deep. This variation of the soil is slightly better drained and more fertile than the typical soil and usually better suited to cultivation. Included with this soil are areas of Beechy fine sandy loam and Hymon silt loam too small to map separately. Small patches and long narrow areas slightly lower than the rest of the soil are swampy most of the year. Some of them form intermittent drainageways. Some of the soil along Holly Fork Creek has a dark-gray silt loam surface soil, 4 to 8 inches thick, that contains more organic matter. It is underlain by material that has color and texture similar to that of corresponding layers in the typical Beechy silt loam.

Use and management.—Most of Beechy silt loam is wooded. The woods have been cut over several times. Some of the woodland is grazed by cattle, but the ground vegetation is sparse and includes many unpalatable sedges, reeds, and coarse grasses. About 25 percent of the cleared area is used for growing corn, and about 35 percent for pasture and hay. A few small patches are used for miscellaneous crops. The rest is mostly idle. Much of the idle land is covered by a heavy growth of brush, briers, and weeds.

Beechy silt loam is poorly suited to row crops, chiefly because it is poorly drained. Crops are damaged by floods and excess moisture. The soil is poorly suited to most tilled crops, although sorghum and soybeans are successfully grown in most years. Yields of corn may be fair to good in dry years but are a total failure in wet years. The soil is fairly well suited to pasture and some hay crops. Whiteclover (pl. 1, *B* and *C*), alsike clover, lespedeza, redtop, fescue, bermudagrass, and ryegrass may be grown on this soil. Applications of lime and phosphorus will improve the soil so that excellent pastures can be grown. When adequately drained, the soil can be used and managed in the same way as Hymon silt loam.

Beechy silt loam, swamp phase (0 to 2 percent slopes) (Bi, 13).—This is a very poorly drained soil on low flood plains. It is waterlogged a considerable part of the year and covered with water for a long time after rains. This soil has developed from materials that washed from upland soils derived mainly from loess. The areas of this soil occupy slight depressions in the bottom lands and are level or nearly level. Runoff is negligible or very slow, and internal drainage is very slow.

The native trees were cypress, willow, birch, alder, sweetgum, black-

gum (tupelo), soft maple, and water oaks. Cattails, sedges, reeds, rushes, and buttonbush are common in places. The soil is associated with other Beechy soils in the eastern part of the county. The principal areas are along Holly Fork Creek, Bailey Branch, and on the flood plain of the Big Sandy River and some of its larger tributaries.

This soil differs from Beechy silt loam chiefly in being saturated with water for more of the time. The surface soil is gray or light brownish gray, mottled with strong brown, very friable silt loam about 4 to 6 inches deep. It is underlain by moderately friable light-gray silt loam or heavy silt loam that is mottled with strong brown. Below about 30 to 50 inches, the material is slightly compact, stratified and interbedded in places with thin layers of silty clay, clay, or sandy material.

This phase is the most poorly drained of the Beechy series. It is swampy and influenced by backwaters from Kentucky Reservoir. The soil is strongly to very strongly acid. Variable quantities of concretions or concretionary material are present in the soil, but normally they are more abundant in the subsoil. The root systems of plants are concentrated in the upper part of the soil because of the prevailing high water table. The soil has a high water-supplying capacity and seldom dries out completely.

Patches of Hymon silt loam and other Beechy soils have been mapped in this separation because of their small size and minor effect on use for agriculture.

Use and management.—More than 95 percent of the soil is wooded. Most of the salable timber has been removed, and the present stand is low in quality. Small patches associated with better drained soils have been cleared, and some serve as rough pasture. Others are idle and are covered with buttonbush and poor-quality pasture plants.

Because of its low fertility and poor drainage, this soil has very limited possibilities. On most farms it is probably best left in forest. Areas that could be adequately drained would be similar to Beechy silt loam in use suitability.

Beechy fine sandy loam (0 to 2 percent slopes) (Bf, 13).—This is a poorly drained light-colored sandy soil of the first bottoms. It is distinguished from Beechy silt loam by its higher content of sand. The parent material consists of mixed silty and sandy alluvium washed from upland soils developed from windblown silts and Coastal Plain sands and clays. The surface relief is nearly level.

The forest vegetation consists chiefly of mixed hardwoods that tolerate the poor drainage. The soil occurs in a few scattered areas, mainly on narrow flood plains below the upland Ruston soils. A small acreage occurs also in narrow, long areas on the broader flood plains. This soil is closely associated with Hymon soils and with other Beechy soils.

Profile description:

0 to 8 inches, light brownish-gray or gray loose fine sandy loam that has light-gray and strong-brown splotches; 4 to 10 inches thick.

8 to 24 inches, light-gray, gray, or very pale brown very friable fine sandy loam or loam that has light-gray and strong-brown mottles; 14 to 30 inches thick.

24 inches +, highly mottled stratified layers of sandy and silty material; 2 to 10 or more feet thick.

Brown and black soft and hard concretions are scattered throughout the soil. Surface drainage is very slow, and all areas are subject to overflow. All layers of the soil are strongly to very strongly acid. The organic-matter content is low. The soil material is permeable to roots, air, and water, but the high water table restricts the root system mainly to the upper part of the soil.

Small patches of Beechy silt loam and Hymon soils form an intricate pattern with this soil in places, and the proportion of silt and sand in the subsoil varies considerably within short distances.

Use and management.—About 60 percent of the soil has been cleared. At present only a few acres are cultivated, and these are mostly small patches next to better drained soils. Corn is the principal row crop. Most of the cleared land is used for pasture and hay, but small patches are used for sorghum and miscellaneous crops. About 15 percent of the soil is idle and covered with brush, briers, and weeds that have very little pasture value. Crop yields average lower than on Beechy silt loam.

Only those crops, the planting of which can be delayed to late spring, and which can tolerate wet soil conditions, can be grown on this soil. Corn, sorghum, and soybeans can be grown moderately well during dry seasons or on better drained areas. Tobacco, small grains, or deep-rooted legumes are poorly suited to the soil because it is too wet. If properly drained, this soil would be similar to the Hymon soils in suitability for use. Although artificial drainage increases the value of the soil, the expense may not be justified by enough need for the extra land.

Hay and pasture crops are probably best suited to this soil under its natural conditions of low fertility and inadequate drainage. During dry periods, the high water-supplying capacity of the soil prolongs the growing season for common grasses and pasture herbage beyond that on the well-drained upland soils. Lime and phosphorus improve this soil for hay and pasture. Whiteclover, alsike clover, lespedeza, redtop, bermudagrass, ryegrass, and fescue can be grown successfully.

Beechy loamy sand, overwash phase (0 to 2 percent slopes) (Bg, 13).—This is a light-colored poorly drained sandy soil on the flood plains. It is Beechy soil that has been covered by a recent overwash of sand or mixed sand, silt, and gravel. The soil is slightly sloping to nearly level. The native vegetation is a sparse mixed growth of weeds, briers, and young trees, chiefly birch, willow, and sycamore. This unit is usually in areas less than 15 acres in size. It is widely distributed in bottom lands and is associated with Hymon soils and other Beechy soils.

The profile of this phase differs from that of the other Beechy soils chiefly in the upper 10 to 20 inches. In general, the surface layer is brownish-gray, gray, or grayish-yellow loose or moderately coherent sand, loamy sand, or sandy loam, mottled with light gray, yellow, and strong brown and containing varying amounts of rounded gravel. The overwash material was laid down in thin irregular strata.

Surface runoff is slow to moderately slow, depending upon slope. Internal drainage is slow. The soil is very low in organic matter and strongly to very strongly acid. It is very permeable to roots, air, and moisture, but the depths of root penetration and aeration are limited

by the depth to the water table. Some areas have small spots of Hymon soils and of other Beechy soils.

Use and management.—Less than 5 percent of the soil is cleared for farming. A few areas next to cultivated soils are used in the same fields for corn, hay, and pasture. Yields are normally low, and crops may not mature when the ground remains wet throughout the growing season. Floods sometimes cause severe damage by scouring or by piling up of fresh sediments (pl. 2, *A*). The soil is poorly suited to hay and pasture because of its wetness and low fertility. Most areas are associated with or surrounded by poorly drained wooded soils. Problems of drainage, water control, fertility, and conservation greatly limit the value of this soil. It is probably best used as woodland.

Bodine cherty silt loam, rolling phase (3 to 12 percent slopes) (Bm, 14).—This is a very cherty light-colored, well-drained to excessively drained soil on upland ridges or gentle slopes. It has developed from parent material weathered from cherty limestone formations. The surface relief consists of mild single slopes, mostly of more than 8 percent.

The native forest growth is mixed hardwoods, mainly oaks and hickory. Small areas are distributed along the east side of the county in association with Greendale, Dexter, Freeland, Mountview, and Ruston soils, and with other Bodine soils.

Profile description:

0 to 6 inches, light brownish-gray to grayish-brown friable cherty silt loam; 4 to 8 inches thick.
6 to 18 inches, light yellowish-brown, brownish-yellow, or yellowish-brown friable cherty heavy silt loam or cherty light silty clay loam; 8 to 15 inches thick.
18 inches +, cherty silty clay loam or light clay loam variegated in shades of brown, yellow, gray, and red; underlain by cherty limestone at depths of 5 feet or more.

Many cherty fragments on the surface and through the soil interfere with tillage. The soil is strongly to very strongly acid and low in organic matter, plant nutrients, and water-supplying capacity. The soil material is very permeable to air, moisture, and plant roots. Runoff is medium but internal drainage is rapid.

The layers vary in degree of development and thickness and in content of chert fragments. In places erosion has removed 25 to 75 percent of the original surface layers; in other places nearly all or all of the upper layers are gone. Most of this soil is still in woods and still has its original surface layers. A few acres of Mountview soils that contain less chert are also in this unit.

Use and management.—About 60 percent of this soil is now in woods. The woods have been cut over a number of times and few trees suitable for sawtimber remain. The soil is on favorable relief on ridgetops and on gentle slopes. However, it is isolated, hard to reach, and associated with low-grade, steep soils of little value for agriculture. Inaccessibility, low fertility, and small size of the separate areas make clearing of the wooded areas for cultivation impractical.

Of the cleared acreage, a little more than half is moderately eroded, and the rest is so severely eroded that it has lost most of its productivity. Most of the cleared soil is idle and is growing up to weeds, brush, and seedling trees. Only a small acreage is farmed, and some is

used occasionally for pasture. A few small patches are cultivated with associated soils. Corn, small grains, and lespedeza are the principal crops. Chert interferes with tillage. The mild slopes and friable well-drained soil favor farming and conservation, but erosion, chertiness, location, low fertility, and low water-supplying capacity make the soil poorly suited to general cropping. The soil responds to good management and its usefulness can be improved by fertilizer and lime. Corn, cotton, tobacco, small grains, and legume hays are among crops suited to this soil.

Bodine cherty silt loam, hilly phase (12 to 25 percent slopes) (Bn, 14).—This is a cherty well drained to excessively drained light-colored upland soil. It has developed from acid materials weathered from the underlying cherty limestone. The forest was composed chiefly of oaks and hickories. Areas of this soil are in the eastern part of the county near the Tennessee and Big Sandy Rivers in the Bodine-Mountview-Paden association. These and other Bodine soils of Henry County are the most western of the cherty limestone soils of the Highland Rim of central Tennessee.

Profile description:

0 to 1 inch, brownish-gray to grayish-brown loose cherty silt loam.
1 to 7 inches, light grayish-brown or grayish-brown very friable cherty silt loam; 5 to 10 inches thick.
7 to 18 inches, light yellowish-brown, yellowish-brown, or brownish-yellow friable cherty silt loam or cherty silty clay loam, faintly splotched gray and red in places; 8 to 18 inches thick.
18 inches +, cherty silt loam or cherty silty clay loam in variegated shades of yellow, brown, gray, and some red; 8 to 20 inches thick; underlain by beds of cherty limestone.

The soil is strongly to very strongly acid. It is low in organic matter and low in fertility. Many angular chert fragments are on and in the soil. Air, moisture, and roots penetrate easily. Surface runoff is rapid and internal drainage is rapid. The water-holding capacity is low.

The soil is shallow and the development of the upper and subsoil layers varies considerably within short distances. In places the parent material includes a small amount of windblown silt that modifies the texture of the surface soil.

Use and management.—All of this soil is now in forest. The forest has been cut over a number of times, and the present stand contains only a few marketable trees. The soil is poorly suited to tilled crops because of steepness, chertiness, low fertility, and low water-supplying capacity. Some pasture can be obtained if the soil is cleared and well managed. Keeping all areas in forest seems to be the most suitable and practical use.

Bodine cherty silt loam, eroded hilly phase (12 to 25 percent slopes) (Bo, 14).—This is a well drained to excessively drained light-colored shallow upland soil that has many angular chert fragments on the surface and through the profile. It has formed from cherty limestone material under hardwood forests. This soil occupies small areas on the eastern side of the county in association with Ruston, Dulac, Paden, and other Bodine soils.

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This shallow soil is similar to the hilly phase of Bodine cherty silt loam, but its original surface layers have been changed by tillage or lost through erosion. The surface layer is grayish-brown or light brownish-gray friable cherty silt loam, 2 to 6 inches deep. The subsoil is light yellowish-brown, brownish-yellow, or yellowish-brown friable cherty silt loam or light silty clay loam, 10 to 18 inches thick. It is underlain by material of similar texture but in varicolored shades of brown, gray, yellow, and red. Cherty limestone bedrock underlies the soil at depths of 5 feet or more.

Chert fragments are conspicuous in the soil, and they make up a large percentage of the volume. The soil is strongly to very strongly acid. It is low in organic matter and plant nutrients but readily permeable to air, moisture, and roots. The open, porous soil allows rapid internal drainage. The water-supplying capacity is low.

The thickness of the surface layer varies greatly within short distances because of losses from erosion. In places so much of the original surface layer has been lost that the plow layer is yellowish in color from mixing with the subsoil. In some patches all the topsoil has eroded away and the subsoil material is exposed. Small gullies have cut into the subsoil and even to the substratum. A few acres of Mountview soils were mapped in some areas of this unit.

Use and management.—All of this soil has been cleared and cultivated at some time. Nearly all of it is now idle, wasteland, or lowgrade native pasture. A few acres are on islands in Kentucky Reservoir. They are very hard to reach and probably will go back to native vegetation and trees. Small patches of this soil are sometimes used for corn or lespedeza.

The use and management of this soil depend on the extent of its erosion. Because of its low fertility, strong slope, chertiness, and erosion damage, it is poorly suited to intertilled crops. It is hard to work and to conserve. The chert interferes with tillage, and the steep slopes make the use of machinery difficult. The soil is hard to cultivate, even with light tools.

Average yields of crops and pasture are low and may be lowered still further by drought. A pasture sod can be established and maintained under good management, but the soil does not produce much forage. Lime and fertilizer increase the amount and quality of forage but the cost is high in relation to returns. This soil would be best used for tree crops.

Bodine cherty silt loam, steep phase (25+ percent slopes) (Bp, 15).—This is a cherty excessively drained, light-colored soil on steep upland slopes. Its parent material weathered from cherty limestone. The soil is the steepest of the Bodine soils in the county. Its slopes may be 60 percent or more. It is like Bodine cherty silt loam, hilly phase, but has steeper slopes. This minor soil is scattered in the far eastern part of the county in the Bodine-Mountview-Paden association.

The native forest is mostly oaks and hickories.

The soil has irregular more or less poorly developed textural horizons. The surface layer is ½ to 1 inch of dark-gray or dark brownish-gray loose cherty silt loam. The next layer is a light brownish-gray or grayish-brown very friable cherty silt loam, 4 to 8 inches thick. The subsoil is light yellowish-brown, brownish-yellow, or yellowish-

brown friable cherty silty clay loam or silt loam, 8 to 15 inches thick. The material beneath is very cherty heavy silt loam or silty clay loam splotched with yellow, brown, gray, and red. Cherty limestone strata underlie this material at depths of 4 feet or more.

The soil is strongly to very strongly acid throughout. A thin layer of leaves and forest litter lies on the surface. The content of organic matter in the soil is very low. The profile is very permeable to air, moisture, and plant roots. Many small and large chert fragments are scattered over the surface and imbedded in all layers. The soil has a low water-supplying capacity. Surface runoff is very rapid, and internal drainage is rapid.

Differences in degree of development, thickness of layers, and quantity of chert fragments are common in short distances. The parent material in some areas is intermixed with loess that has modified the texture and chertiness of the soil layers. Some places have a few acres of Mountview soil that is free of chert. Along the lower part of some slopes, the surface soil is deeper because it has received material washed from the higher parts of the slope. Bedrock of cherty limestone outcrops on some slopes.

Use and management.—All areas of this soil are covered by hardwood forest. The forest has been cut over, and the present stand varies in density and quality. Very steep slopes, chertiness, low fertility, and low water-supplying capacity would make this soil very difficult to work and conserve if cleared for either crops or pasture. The effort required to farm this soil narrows its practical use to forestry.

Brandon silt loam, undulating phase (2 to 5 percent slopes) (Br, 4).—This well-drained brown shallow silty soil occurs on ridgetops in strongly dissected uplands. Its parent material, windblown silt less than 3½ feet deep, was deposited upon stratified beds of gravel (pl. 2, *C*). The soil has more gravel beneath its subsoil than the Lexington soils have. It has no hardpan like that of the Lax soils.

The original forest cover was mostly oaks and hickory. Surface relief is mild and consists of single slopes of less than 5 percent in gradient. The soil occurs on high ridges in the eastern part of the county. It is associated with Lax, Ruston, Lexington, and Guin soils, but mostly the Guin and Lax soils.

Profile description:

0 to 1 inch, dark-gray very friable mellow silt loam covered with forest debris.
1 to 6 inches, brown to grayish-brown very friable mellow silt loam; well-developed medium crumb structure; 5 to 8 inches thick.
6 to 20 inches, yellowish-brown to strong-brown friable silty clay loam; moderate medium blocky structure; 12 to 16 inches thick.
20 to 30 inches, yellowish-red or strong-brown friable silt loam or heavy silt loam; weak to moderate medium blocky structure; 8 to 12 inches thick.
30 inches +, gravel beds of mixed chert, sandstone, and quartz; 3 to 25 feet or more thick.

The soil is medium to strongly acid and is moderately low in humus. It is readily permeable to air, roots, and water. Surface runoff is slow and internal drainage is medium. The soil has a good water-supplying capacity but becomes dry in droughty periods because

it has a porous, open, gravelly substratum. The plow layer is almost free of gravel.

The soil varies chiefly in the thickness of the lower layers and in depth to the underlying gravel. Some small areas of Lax and Lexington soils are included.

Use and management.—All areas of Brandon silt loam, undulating phase, are now in woods. Many of them are within larger forests. The woods have been cut over a number of times. The present stand contains few merchantable trees. Timber grows slowly and average yields are low.

The soil is productive and fairly easy to work, conserve, and maintain in good tilth. Its physical properties favor moderately intensive production of all the common crops of the county. The cleared areas are moderately susceptible to erosion. Some areas are on narrow ridges in association with large bodies of steep soils and are isolated from other crop-adapted soil. Other areas are on narrow spurs of broad ridges that are not suitable for cultivation with heavy farm machinery.

Brandon silt loam, eroded undulating phase (2 to 5 percent slopes) (Bs, 4).—This is a moderately eroded well-drained shallow silty brown soil on the higher ridges of a strongly dissected landscape. It differs from the undulating phase in being cleared of its forest cover and in having lost a significant amount of topsoil by erosion. The parent material of this soil was a thin accumulation of silt over beds of gravel.

The original forest cover was a mixed stand of hardwoods, chiefly oaks and hickories. The soil is widely distributed over the eastern part of the county in small areas. It is associated with the Lax, Lexington, Guin, and Ruston soils.

This soil resembles Brandon silt loam, undulating phase, except for the top two layers. Under cultivation, the original material in the upper layer was changed and mixed and part of it was carried away by erosion. The plow layer now consists of the thin remains of the upper layers mixed with some of the upper subsoil. It is a complex and varying mixture of grayish-brown, brown, and yellowish-brown friable silt loam, heavy silt loam, and light silty clay loam, 6 to 8 inches deep. The subsoil is yellowish-brown or strong-brown friable silty clay loam, 10 to 15 inches thick. It grades into yellowish-red or strong-brown friable silt loam or heavy silt loam, 8 to 15 inches thick. At 25 to 42 inches occur gravel beds of mixed chert, quartz, and sandstone material that are 4 to 25 feet or more thick.

The soil is low in organic matter, medium to strongly acid, and higher in fertility than the associated soils. All layers of the soil are readily permeable to roots, air, and water. Both surface runoff and internal drainage are medium. This soil has a good water-holding capacity, but the more eroded parts do not absorb rainfall so well, and the runoff is rapid. The plow layer is generally free of gravel and stones.

Use and management.—All areas of this soil were once cleared of timber and used for farming. About 25 percent is now idle and covered by a mixed native growth of weeds, briers, and brush. Most of the rest is cultivated for such general crops as corn, small grains,

cotton, lespedeza, crimson clover, and grass hay. Small patches are used for gardens.

The soil is suited to a wide variety of crops, including corn, cotton, tobacco, and sweetpotatoes. When properly fertilized and limed, the soil is suited to alfalfa and red clover. It is easy to work and conserve. The mild slopes favor the use of heavy farm machinery. Areas on the wider ridges can be used intensively. Much of the acreage, however, consists of narrow, long bodies or small units. These are cultivated with animal-drawn implements because the use of power tools is not efficient on such small areas. The water-supplying capacity of the soil is enough for moderately high yields. Runoff from eroded areas is rapid enough to make such places droughty. Cultivation and erosion have depleted the organic matter, lime, and plant nutrients, but the soil responds to good management. Its use suitability can be increased significantly by applying fertilizer and lime, by turning under green manures, and by using adapted crops in a short rotation.

Brandon silt loam, rolling phase (5 to 12 percent slopes) (Bt, 5).—This is a well-drained, shallow, friable, brown soil on upland slopes. It developed under deciduous forest from a layer of windblown silt 2 to 3 feet thick, underlain by stratified beds of waterworn gravel. Its slopes are stronger than those of the undulating phase of Brandon silt loam. The soil is associated with Lax, Ruston, Lexington, and Guin soils.

Profile description:

0 to 1 inch, dark-gray or dark brownish-gray mellow silt loam.
1 to 6 inches, grayish-brown or brown mellow very friable silt loam; 5 to 8 inches thick.
6 to 22 inches, strong-brown or yellowish-brown friable silty clay loam; 10 to 18 inches thick.
22 to 35 inches, yellowish-red or strong-brown friable silt loam or heavy silt loam; 10 to 14 inches thick.
35 inches +, stratified beds of waterworn gravel composed of chert, sandstone, and quartz; 3 to 25 feet or more thick.

The soil is medium to strongly acid and is moderately low in organic matter and plant nutrients. The soil has good permeability to air, water, and roots. The plow layer is free of gravel and stones. Both surface runoff and internal drainage are medium. The soil material has a good water-supplying capacity, but the porous gravel beneath permits such rapid underdrainage that the soil may become droughty in periods of low rainfall.

In places small areas of Lax, Lexington, and other Brandon soils form a complex pattern with this soil.

Use and management.—All this soil is in woods consisting mainly of oaks and hickories. Most of these woods are part of larger forests. The trees vary in age and growth because of frequent cuttings. Nearly all the merchantable timber has been cut.

This soil is moderately productive of the crops generally grown in Henry County. It is a friable mellow soil, easy to work, conserve, and keep in good tilth. The slope makes it susceptible to erosion when cleared. Some areas are so isolated and surrounded by steeply sloping soils of low fertility that they cannot be cultivated efficiently. When cleared the soil is suited to a variety of crops, such as corn, cotton,

tobacco, small grains, lespedeza, alfalfa, crimson clover, red clover, orchardgrass, redtop, whiteclover, and vegetable crops.

Brandon silt loam, eroded rolling phase (5 to 12 percent slopes) (Bu, 5).—This moderately eroded, well-drained, friable, brown soil occurs on the upper slopes or on ridgetops in a strongly rolling landscape. It is like the rolling phase of Brandon silt loam but has lost part of the surface layer by erosion. The parent material consists of a mantle of loess, 20 to 40 inches deep, deposited upon beds of stratified gravel. Areas of this soil occupy some of the higher elevations in association with Lax, Loring, Ruston, Guin, and Lexington soils.

Originally this soil was like the rolling phase of Brandon silt loam, but mixing of the upper layers in tillage and loss of soil by erosion have changed the profile. Under cultivation, the plow layer is a brown, grayish-brown, or yellowish-brown friable silt loam or heavy silt loam. The subsoil is yellowish-brown or strong-brown friable silty clay loam, 10 to 15 inches thick, that merges into strong-brown to yellowish-red friable silt loam or heavy silt loam, 8 to 14 inches thick. This last-named layer is underlain by stratified layers of chert, quartz, and sandstone gravel that extend to depths of 15 to 25 feet or more.

The soil is medium to strongly acid. Erosion and cropping have depleted the supply of organic matter and plant nutrients. All layers of the soil are permeable to roots, water, and air. Both surface runoff and internal drainage are medium. Although moisture is absorbed and retained fairly well, the absorption of the soil has been reduced somewhat by erosion. The surface layer is free of gravel and stones.

From 25 to 75 percent of the original surface layer has been lost through erosion. The thickness of the remaining surface layer is irregular, and small patches of subsoil are exposed. Intermixing of the thin remnants of the top layer with the subsoil has caused some variation in texture of the plow layer, and this affects the tilth. Small areas of Lax silt loam are included, and they form an intricate pattern with the Brandon soil.

Use and management.—All the soil has been cleared for farming, but about half of it is now idle. The rest is used with associated soils for crops or pasture. The common crops are corn, small grains, lespedeza, and grasses.

This soil is moderately productive and is easy to work and conserve. Favorable moisture and tilth are easy to maintain, and crops respond readily to the use of soil amendments. More power is required to operate heavy farm implements on this soil than on the undulating phases. The physical properties of the soil favor a variety of crops, including corn, cotton, tobacco, potatoes, wheat, oats, rye, barley, lespedeza, red clover, alfalfa, grass hays, and vegetables.

Brandon silty clay loam, severely eroded rolling phase (5 to 12 percent slopes) (Bw, 6).—This is a severely eroded well-drained silty brown soil on the upper slopes of a hilly, dissected landscape. It has lost considerably more soil material by erosion than other phases of Brandon soils and is lower in content of humus, lime, and mineral plant nutrients. The surface relief consists of single slopes. The areas are small or medium in size and are associated with areas of

Lax, Guin, Ruston, and Lexington soils and with areas of other Brandon soils.

The surface layer is grayish-brown, brown, or yellowish-brown friable silt loam or silty clay loam, 2 to 6 inches deep. The finer material is somewhat sticky and plastic when wet but hard when dry. The subsoil is yellowish-brown or strong-brown friable silty clay loam, 10 to 15 inches thick. It grades into yellowish-red or strong-brown friable silt loam or light silty clay loam, 8 to 15 inches thick. This last-named layer is underlain by strata of mixed chert, quartz, and sandstone gravel ranging up to 25 feet or more in thickness.

Most, or all, of the original surface layer has been lost by erosion. The subsoil is exposed in many places. Shallow gullies cutting into the subsoil are common. The present plow layer is a mixture of the remains of the original surface layer and the upper part of the subsoil. It ranges from silt loam to silty clay loam.

This soil is strongly to very strongly acid. It is low in organic matter, plant nutrients, and water-holding capacity. The soil material is permeable to water, air, and roots. Erosion, however, has so lowered the absorptive capacity of the soil that most of the rainfall runs off. Internal drainage is medium.

Use and management.—All of this soil has been cleared for crops, but most of it is now idle or in unimproved pasture. The carrying capacity is low. Some of the severely eroded places are bare or have only scant vegetation. A few acres are planted to corn and lespedeza, but yields are very low.

This soil is poorly suited to tilled crops and pasture because of erosion damage. Lowered supplies of lime, humus, and plant nutrients have resulted in low productivity. The soil is moderately easy to work but not so easy to conserve or to keep in good tilth. The water-supplying capacity is low, and the soil is very droughty in dry seasons. The soil probably is best suited to pasture. If the soil is limed, fertilized, and properly managed, most of the legumes and grasses of the county can be grown successfully.

Briensburg silt loam (1 to 5 percent slopes) (By, 3).—This imperfectly drained soil occupies alluvial fans, gentle slopes at the base of steep upland soils, or narrow V-shaped valleys along deeply entrenched stream channels. It has formed from mixed colluvial-alluvial deposits washed from uplands of loessial and sandy Coastal Plain soils. Silty materials predominate. The areas are above normal overflow and are not covered by floodwaters for any prolonged time.

The native forest growth is mostly oaks and hickory. The soil is widely distributed in small areas of a few acres each, mainly along intermittent drainageways. It is chiefly associated with Memphis, Lexington, and Providence soils of the uplands, Freeland and Hatchie soils of the terrace lands, and Shannon and Beechy soils of the flood plains.

Profile description:

0 to 15 inches, grayish-brown or brown mellow silt loam; 10 to 25 inches thick.

15 to 21 inches, brownish-gray to light-brown friable silt loam showing distinct light-gray and strong-brown mottles; 4 to 10 inches thick.

21 to 48 inches +, friable silt loam irregularly mottled with gray, yellow, and brown; contains thin beds of sandy material in places; 2 to 6 feet or more thick.

The soil is strongly to very strongly acid throughout the profile. It is moderately well supplied with organic matter and mineral plant nutrients. The upper soil layer is permeable to plant roots, air, and water. In the subsoil, the fluctuations in level of the water table restrict air circulation and cause plant roots to concentrate above the mottled zone. Surface runoff is moderately slow, and internal drainage is slow. The soil is free of gravel but does have a few chert fragments in some areas. Dark-colored concretions are scattered throughout the soil but are most abundant in the mottled layer.

This young soil has very little if any textural development in the profile. The variations in depth to the poorly drained mottled subsoil strongly affect plant growth. The most productive areas usually have the deepest mottle-free layer.

About 30 acres of a similar soil on stream terraces has been put into this mapping unit. This soil differs in having fairly well defined textural layers in its profile. The surface soil is grayish-brown or brown friable silt loam, 6 to 12 inches thick. It is underlain by brown to yellowish-brown friable heavy silt loam or silty clay loam, 14 to 24 inches thick. Below this is yellowish-brown heavy silt loam to silty clay loam containing a few gray and strong-brown mottles. The productivity of this included soil is comparable to that of Briensburg silt loam.

Use and management.—Nearly all of Briensburg silt loam has been cleared and is used intensively for crops. Corn, cotton, and lespedeza are grown most extensively. Some areas are in pasture, and a small acreage is used for miscellaneous crops. About 10 percent is wooded or idle.

Briensburg silt loam is moderately productive and is easy to work, conserve, and maintain in good tilth. Its use suitability is somewhat restricted by imperfect subsoil drainage. The moderately high natural fertility favors intensive cropping, but amendments are necessary to keep the soil productive. The general yield level could be increased by using fertilizers and improving drainage. Corn, cotton, lespedeza, tobacco, soybeans, small grains, shallow-rooted legumes, and grasses can be grown successfully under good management. Alfalfa and other deep-rooted plants are not well adapted, because underdrainage is poor.

Briensburg fine sandy loam (1 to 5 percent slopes) (Bx, 3).—This is an imperfectly drained soil consisting of colluvial-alluvial materials. It occupies outwash fans at the mouth of small drainageways, gently sloping areas at the base of upland slopes, or narrow sloping areas paralleling deeply entrenched drainageways. The parent material consists of mixed recent accumulations of silty and sandy sediments washed from upland soils that were derived from loess and Coastal Plain materials. Sandy material predominates.

This soil has developed under a hardwood forest, chiefly oaks and hickory. It is distributed throughout the county. The chief soils associated with it are the Ruston, Lexington, and Providence soils of the uplands, the Freeland and Hatchie soils of the terraces, and the Hymon and Beechy soils of the bottom lands.

Profile description:

0 to 15 inches, grayish-brown to yellowish-brown loose fine sandy loam; 8 to 24 inches thick.
15 to 25 inches, light-brown to yellowish-brown friable fine sandy loam that has a few to many gray and strong-brown mottles; 6 to 15 inches thick.
25 inches +, stratified layer of sand and silt that shows varied mottlings of gray, yellow, and strong brown; thin irregular beds of gravel occur in places; 2 to 6 feet or more thick.

This soil is strongly to very strongly acid and is low in humus and plant nutrients. It is permeable to roots, air, and water, but the level of the water table determines the depth of rooting and of air circulation. Little surface water runs off because of the sandy texture and mild relief. Internal drainage is medium to slow. The water-supplying capacity is high.

Use and management.—About 40 percent of the soil is in woods; the cleared land is in crops or pasture. A large acreage is used intensively for corn. Lespedeza is the main hay crop. About 10 percent is in miscellaneous crops or is idle.

The soil has medium to moderately low inherent fertility. It is easy to work and conserve. The mild slopes and workability of the soil favor the use of heavy farm machinery. Because danger of flooding is very slight, this soil is suited to a wider variety of crops than the Hymon soils on the bottom lands. Nevertheless, imperfect subsoil drainage limits its use for alfalfa and other deep-rooted crops. It is well suited to many of the common crops of the county, such as corn, small grains, grass-and-legume hay, soybeans, sorghum, small fruits, and vegetables. Some areas can be managed easily with adjoining soils. Others are long, narrow bodies walled in by steep slopes. These less readily accessible areas may require special practices if they are to be cropped efficiently.

Calloway silt loam, level phase (0 to 2 percent slopes) (Ca, 10).—This is an imperfectly drained light-colored claypan soil on broad upland flats. It is intermediate between the Henry and Grenada soils in drainage and in many profile characteristics. Its parent material was deep windblown silt. The soil occupies nearly level or slightly depressed areas. It developed under a hardwood forest consisting chiefly of oaks and hickory. Small areas occur throughout the northwestern, north-central, and central sections of the county. Associated with this soil are Grenada, Henry, Loring, and Dulac soils. This soil is chiefly in the Grenada-Calloway-Henry soil association.

Profile description:

0 to 6 inches, brownish-gray, grayish-brown, or pale-brown very friable silt loam, specked with a few faint fine strong-brown mottles; 5 to 8 inches thick.
6 to 13 inches, brownish-yellow, pale-yellow, or light yellowish-brown friable heavy silt loam or silty clay loam containing a few to a moderate number of light-gray and strong-brown mottles; weak very fine blocky structure; 6 to 9 inches thick.
13 to 23 inches, light yellowish-brown friable heavy silt loam or silty clay loam splotched with light-gray and strong-brown mottles; very weak very fine blocky structure; 10 to 15 inches thick.
23 to 38 inches, compact silty clay loam or heavy silty clay loam, mottled in shades of gray, yellow, and brown; 10 to 15 inches thick.

38 inches +, yellowish-brown or brownish-yellow moderately firm heavy silt loam or light silty clay loam; has gray and strong-brown mottles; extends to depths of 4½ to 6 feet; underlain by sandy clay Coastal Plain material.

The soil is strongly to very strongly acid throughout and is low in organic matter. The upper layers are more or less permeable to air, moisture, and roots, but the compact layer is only very slightly permeable. Water accumulates above the pan layer during winter and spring and saturates the upper layers. Aeration varies with the water-table level. Roots are concentrated in the upper part of the soil and few reach the pan layer. The water-supplying capacity is moderate. Surface runoff is very slow. After rains many puddles are left on the surface. Internal drainage is very slow. The soil is free of gravel and stones, but many semihard to hard concretions are on the surface and scattered through the profile.

The drainage and color of the surface layer vary. The pan layer varies from a compact silt loam to a dense heavy silty clay loam, but the layer is everywhere very slowly permeable. Some areas of Henry and Grenada soils too small to show separately on the soil map are included with this soil.

Use and management.—About 35 percent of this soil is in woods. Most of the cleared land is idle or in pasture. A few acres are used with adjoining soils for corn, small grains, lespedeza, and some tobacco. Crop yields are low.

The soil is low in organic matter and plant nutrients and relatively low in natural productivity. It is easy to work and to conserve. Fall-sown grain may be damaged by too much water and by alternate thawing and freezing during winter. The water table lowers very slowly in the spring, and preparation of the soil is frequently delayed. This restricts use of the soil. It is best adapted to summer annual crops, especially hay and pasture. In some years corn, tobacco, and wheat may succeed. The soil is suitable for sericea lespedeza, redtop, soybeans, sorghum (pl. 3, *A*), alsike clover, and moisture-tolerant grasses. It is not suited to cotton, alfalfa, or fruit trees. Red clover probably can be successfully grown if fertilized heavily.

Calloway silt loam, undulating phase (2 to 5 percent slopes) (Cb, 10).—This is an imperfectly drained light-colored hardpan soil of the smoother uplands. It has developed from windblown silt under a forest of oaks and hickory. Relief is very gentle. This is a minor soil that occurs in small areas scattered over the north-central and central parts of the county. It is associated with Grenada, Dulac, and Tippah soils.

Surface drainage is better on this undulating phase than on the level phase of Calloway silt loam. The surface layer is a brownish-gray to grayish-brown very friable silt loam. The subsoil consists of brownish-yellow, pale-yellow, or light yellowish-brown, friable heavy silt loam or silty clay loam, splotched in the lower part with light gray and strong brown. A relatively impermeable hardpan at a depth of about 2 feet is characteristic of the soil.

The soil is strongly to very strongly acid and low in organic matter. The upper layers are permeable to moisture, air, and roots, but depth of aeration is determined by the level of the water table. The pan layer is very slowly permeable, and roots do not penetrate it. The

soil has a moderate water-supplying capacity. Surface runoff is medium to slow, and internal drainage is very slow. Water accumulates over the nearly impervious pan layer in rainy seasons. Some areas receive seepage from higher soils. Dark-colored iron concretions are abundant on and through the soil.

Use and management.—About 30 percent of the soil is wooded. Most of the cleared land is used for pasture or hay. A few acres farmed with adjoining soils produce corn, lespedeza, and some tobacco.

The soil is low in organic matter and plant nutrients and has low natural productivity. It is easy to work at the proper moisture content and is fairly easy to conserve. Its suitability for crops is somewhat limited by imperfect drainage, but it has better surface drainage than the level phase of Calloway silt loam. The soil warms up very slowly in spring, and preparation for planting is frequently delayed.

The soil would be more useful if artificially drained, but drainage is difficult because of the very slowly permeable hardpan. The high water table prevents deep penetration of roots, and during long dry periods crops may be damaged by drought. Only moisture-tolerant crops should be grown. Lespedeza, alsike clover, redtop, orchardgrass, fescue, sorghum, and soybeans are fairly well suited. Corn, tobacco, and wheat may grow in good seasons. When properly fertilized and limed, red clover can be grown, but alfalfa is generally a failure. Sericea lespedeza is a deep-rooted legume that can be successfully grown on this soil.

Calloway silt loam, eroded undulating phase (2 to 5 percent slopes) (Cc, 10).—This is an imperfectly drained light-colored hardpan soil of the smoother uplands. It was derived from a moderately deep mantle of loess. It occurs on a mild relief in a slightly dissected landscape. The areas are small and widely distributed over the north-central and central sections of the county in association with Henry, Grenada, Tippah, and Dulac soils and other soils of its own series.

This soil is like Calloway silt loam, undulating phase, but has lost 25 to 50 percent of the original surface soil through erosion. The present plow layer includes a part of the subsoil in places. Only in small patches has enough subsoil mixed with the surface layer to change the texture significantly. The present surface layer is brownish-gray to light yellowish-brown mellow silt loam, 4 to 6 inches thick. The upper subsoil, a brownish-yellow to pale-yellow friable heavy silt loam, or silty clay loam, is streaked light gray, yellow, and brown and is 8 to 12 inches thick. It grades into light yellowish-brown heavy silt loam or silty clay loam that contains numerous light-gray and strong-brown mottles. At a depth of about 24 inches, after an abrupt transition, there is a layer of compact silt loam to heavy silty clay loam irregularly mottled in shades of gray, yellow, and brown.

This is a strongly to very strongly acid soil. It has a low content of organic matter and plant nutrients. The upper layers are permeable to moisture, air, and roots, but the perched water table that forms over the very slowly permeable hardpan keeps the soil saturated for long periods. The depth of air circulation is limited by the level of the water table. Plants establish their root systems in the upper part of the soil; few feeder roots reach the hardpan. Surface runoff is slow to medium. Internal drainage is slow. The soil has a limited

water-storing capacity, and crops are damaged during extended dry spells. Semihard and soft, small, dark concretions are fairly numerous over the surface and through the soil layers.

Use and management.—All areas of this soil are cleared and have been used for crops and pasture. Most of them are now used for hay and pasture. Only a few acres produce common field crops, mainly corn and lespedeza.

The soil is low in lime, organic matter, and plant nutrients and has low productivity for most crops. The upper layers are easy to till and fairly easy to conserve. Nevertheless, the soil has limited suitability for use because it is imperfectly drained and is eroded. It would be suited to a wider choice of crops if its drainage were improved. The soil is suited to short crop rotations, but the few crops that can be grown are best used in long rotations. Shallow-rooted,quick-maturing summer annual crops are apparently best suited. Corn, lespedeza, alsike clover, whiteclover, Ladino clover, fescue, redtop, soybeans, and sorghum are among the suitable crops. Red clover can be grown if well fertilized, but sericea lespedeza is better suited to the imperfect drainage and low fertility of this soil.

Center silt loam, level phase (0 to 2 percent slopes) (Ce, 10).—This is an imperfectly drained soil on broad upland ridges. It has developed from a moderately deep mantle of silt deposited upon sandy Coastal Plain materials. It is like the Calloway soils in drainage and many other characteristics, but it has a browner surface layer and no distinct hardpan. The soil occurs in shallow depressions or at the heads of drainageways in an undulating slightly dissected landscape. It is level to nearly level.

The native forest consists chiefly of such water-tolerant hardwoods as oaks, hickory, beech, gum, and elm. Areas are small and widely distributed over the western part of the county in association with Loring, Memphis, and Routon soils. The largest areas are along State Highway 69 south of Osage.

Profile description:

0 to 7 inches, brown or grayish-brown mellow very friable silt loam; weak medium crumb structure; 5 to 10 inches thick.

7 to 15 inches, brown to yellowish-brown friable heavy silt loam, lightly splotched with gray and strong brown; moderate medium crumb structure; 3 to 9 inches thick.

15 to 35 inches, light yellowish-brown to brown friable heavy silt loam or silty clay loam, irregularly mottled gray and strong brown; weak medium blocky structure; 15 to 24 inches thick.

35 to 40 inches, light brownish-gray, splotched light yellowish brown and light gray, friable or moderately friable heavy silt loam; weak medium to coarse blocky structure; 4 to 8 inches thick; layer contains many large, soft, brown concretions in most places.

40 inches +, pale-brown or brownish-yellow slightly firm but friable mellow silt loam with light-gray and strong-brown mottles; extends to depths of 5 to 8 feet; underlain by unconsolidated sandy materials.

The soil varies from medium to strongly acid. Compared to other upland soils, it is moderately well supplied with organic matter. The soil material is permeable to air, roots, and moisture. However, the high and fluctuating water table restricts aeration to the upper part of the soil during much of the year. Most plant roots are concentrated in the surface layer and upper subsoil. The water-supplying capacity

of the soil is moderately high. Surface runoff is slow, and internal drainage is moderately slow. Large soft concretions occur throughout the soil and are very numerous in the mottled layers.

In wooded areas the upper inch or two is dark gray or dark grayish-brown mellow silt loam that contains a moderate amount of organic matter. Within short distances the subsoil varies in texture from silt loam to silty clay loam and also in the quantity of mottles. Some areas include Calloway and Henry soils too small to be shown separately on the soil map.

Use and management.—About 35 percent of this soil is wooded. Most of the cleared land is used for hay and pasture. Corn and lespedeza are the chief crops, but a few acres are used for tobacco, small grains, and soybeans. Crop yields are medium to moderately low.

The use of this soil is limited by imperfect drainage. The soil is moderately well supplied with lime and organic matter but is low in plant nutrients, especially potassium. The soil is moderately productive of the crops to which it is suited. It is easy to cultivate and keep in good tilth but is too wet to work early in spring. Erosion is not a problem because the soil is nearly level. Most areas are hard to drain because of their low position and lack of natural outlets.

The soil is best for plants that tolerate excess moisture. It is probably best suited to hay and pasture, but it is fairly well suited to corn, tobacco, sorghum, and soybeans. Lespedeza, alsike clover, whiteclover, Ladino clover, red clover, redtop, orchardgrass, meadow fescue, and other grasses are among suitable hay and pasture plants. The soil is not well adapted to alfalfa or to fruit trees.

Center silt loam, undulating phase (2 to 5 percent slopes) (Cf, 10).—This imperfectly drained soil occurs on the smoother uplands that have a moderately deep mantle of silt overlying sand. Its forest cover is a mixture of moisture-tolerant hardwood trees. The areas occur typically in shallow basins or along or around the heads of some intermittent drains. The terrain is slightly dissected. This soil differs from Calloway silt loam, undulating phase, in having a browner surface soil and in lacking a distinct hardpan.

The surface layer is a brown or grayish-brown friable silt loam. The subsoil is brown or yellowish brown and becomes lighter colored and mottled at a fairly shallow depth. The soil is widely distributed over the western half of the county; it is associated with Memphis, Loring, and Routon soils and with other Center soils.

This soil is medium to strongly acid and medium in content of organic matter. The soil material is permeable to roots, air, and moisture. The circulation of air through the soil is limited by the level of the water table. Most roots are concentrated in the upper part of the soil and few extend into the highly mottled layer. The soil has a moderately high water-supplying capacity. Surface runoff is moderately slow. A few concretions are distributed through the upper layers, but they are abundant in the conspicuously mottled parts of the soil.

Use and management.—Nearly all of this soil is covered by oaks, hickory, and a few beech, elm, and sweetgum trees. The woods have been cut over, and the present stand has many young trees and some

that are timber size. The undergrowth is sparse, and many saplings have been injured by grazing.

The soil is easy to work and to conserve. It is moderately productive but the imperfect drainage narrows the kinds of crops that can be grown. Some areas are hard to drain because they have no outlets. Where drainage by open ditches is possible, the use suitability could be broadened. Corn, soybeans, sorghum, lespedeza, white, Ladino, and alsike clovers, and redtop, meadow fescue, and other grasses are among suitable crops. This is a desirable soil for hay and pasture.

Center silt loam, eroded undulating phase (2 to 5 percent slopes) (Cg, 10).—This is an imperfectly drained soil on the smoother uplands. It formed from a moderately deep layer of silt over sand at the heads of or along intermittent drainageways in the smoother parts of a slightly dissected landscape. Areas are small and are associated with the Memphis, Loring, and Routon soils and with other Center soils in the western half of the county.

This soil is similar to the level phase of Center silt loam, but it is undulating, and much of the original surface layer has been removed by erosion. The amount lost varies in all areas, and the subsoil is exposed in a few severely eroded spots. In some places the mixing of the surface layer and subsoil has modified the color and texture of the present plow layer.

The soil is medium to strongly acid and medium in content of organic matter. The soil material is permeable to roots, air, and water, but aeration and root penetration are limited by the fluctuating high water table. Roots are most abundant in the upper part of the soil, and few penetrate the highly mottled zone. The water-supplying capacity is moderate. Surface runoff is medium, and internal drainage is slow. The soil contains some small to large soft concretions.

Use and management.—All of this soil has been cleared and is used mainly for hay and pasture. It is not used intensively for row crops, but corn, soybeans, and lespedeza are produced on a few acres in fields with other soils.

This is a moderately productive soil. It is fairly easy to work and conserve and is medium in lime and humus content. Tilth is not so easy to maintain because of loss of surface material by erosion. Imperfect drainage has limited the kinds of crops that can be grown. The soil is well suited to hay and pasture. Improved drainage would widen its use for general field crops. Corn, tobacco, soybeans, sorghum, and small grains can be grown satisfactorily if managed properly. Alsike, red, white, and Ladino clovers, redtop, fescue, and orchardgrass are adapted.

Dexter silt loam, undulating phase (2 to 5 percent slopes) (Df, 4).—This is a well-drained friable brown soil on undulating terrace lands. Its parent material is a thin silt mantle over old stream alluvium, mainly sandy Coastal Plain materials. On some of the younger and lower terraces the parent material consists of mixed old alluvium, mainly loess and Coastal Plain materials. The forest cover is mixed deciduous hardwoods. This soil is the best drained member of the Dexter, Freeland, Hatchie, and Almo group of soils. It is associated with the other soils of its group on the major stream terraces. The

soil occurs on terraces in all parts of the county but mostly on those within the Tennessee River watershed.

Profile description:

0 to 1 inch, dark-gray or dark grayish-brown, mellow, very friable silt loam.
1 to 8 inches, grayish-brown or brown, mellow, very friable silt loam; 6 to 10 inches thick.
8 to 18 inches, reddish-yellow to yellowish-red friable heavy silt loam or light silty clay loam; weak medium blocky structure; 8 to 12 inches thick.
18 to 36 inches, reddish-yellow to reddish-brown friable silty clay loam; moderate medium blocky structure; 15 to 24 inches thick.
36 inches +, reddish-brown, reddish-yellow, or yellowish-red slightly firm to friable heavy silt loam, silty clay loam, or clay loam that is streaked with gray and yellow in places; extends to depths of 6 to 8 feet or more.

The soil has a medium content of organic matter and is medium to strongly acid. It is readily permeable to air, moisture, and roots in all layers. The water-supplying capacity is high. Surface runoff is moderately slow, and internal drainage is medium.

Some areas have a loam or fine sandy loam surface soil, but this makes little difference in suitability for use and the management needed.

Use and management.—About 90 percent of the soil is in woodland composed of various oaks, hickory, and a scattering of beech, maple, and sweetgum. The present stand consists mostly of young, small trees, but there are a few trees of merchantable size.

Cleared areas show little or no erosion. Corn and lespedeza are the main crops, but others, such as tobacco, small grains, and red clover, are grown on a few acres without any particular rotation system.

This is a highly productive soil. Cleared areas are easy to work, easy to conserve, and easy to keep in good tilth. The relief is suitable for use of all types of heavy farm implements. Moisture supplies are adequate for normal plant growth in most seasons. The soil is well adapted to a wide variety of crops, including all the common crops grown in the county. Properly fertilized, it is very well suited to such exacting crops as alfalfa and red clover. It is very responsive to good management. Comparatively high levels of productivity can be maintained, even if short crop rotations are used.

Dexter silt loam, eroded undulating phase (2 to 5 percent slopes) (Dg, 4).—Most of the soil is distributed along the larger streams in the Tennessee River watershed, but a few areas are scattered in the western part of the county. It is a well-drained, friable, brown, deep soil on stream terraces. It differs from the undulating phase of Dexter silt loam chiefly in being eroded. About 25 to 75 percent of the original surface layer was carried away by erosion, but enough remains in parts of some areas to form the plow layer. In small patches the original surface and the subsoil are mixed, and in a few spots the subsoil is exposed. The present surface layer varies from grayish brown to yellowish brown in color and from silt loam to silty clay loam in texture. The subsoil consists of yellowish-red or reddish-brown friable silty clay loam.

The soil is medium to strongly acid and has a moderate content or organic matter. The soil material throughout is readily permeable to air, moisture, and roots. The water-supplying capacity is moderately high. Both surface runoff and internal drainage are medium.

About 9 percent of the soil has a fine sandy loam surface layer. This variation has the same use suitability and management requirements and is only slightly lower in productivity.

Use and management.—All areas of this soil have been cleared and nearly all of it is used for crops or pasture. A few acres are used as a game refuge. Some of the soil on islands formed by Kentucky Reservoir is difficult to reach. The chief crops are corn and lespedeza, but some other crops are grown. The soil is used rather intensively and little of it is idle.

This is a moderately productive soil suited to a wide variety of crops. It is easy to work and easily kept in good tilth. It is fairly easy to conserve. The soil warms up quickly in the spring and its good drainage usually permits preparation for crops at an early date. Moisture is generally sufficient for crops or pasture during summer. The soil can be cultivated over a fairly wide range of moisture conditions without injury. It responds readily to good management and may be kept highly productive. The soil is well suited to all the field crops normally grown in the county. Both shallow and deep-rooted legumes can be grown successfully.

Dexter silt loam, rolling phase (5 to 12 percent slopes) (Dh, 5).—This well-drained, brown, friable soil is on old, high terraces along the large streams throughout the county. It occurs in association with Freeland, Hatchie, Beechy, and Briensburg soils, and with other Dexter soils. The soil formed from old mixed alluvium derived from loessial or sandy Coastal Plain materials or from a thin loess layer over sandy alluvium. The forest cover consists of mixed hardwoods.

Profile description:

0 to 1 inch, dark grayish-brown or dark-gray mellow very friable silt loam.
1 to 8 inches, grayish-brown or brown mellow very friable silt loam; 6 to 10 inches thick.
8 to 16 inches, reddish-yellow to yellowish-red friable heavy silt loam or light silty clay loam; weak medium blocky structure; 6 to 10 inches thick.
16 to 34 inches, reddish-yellow to reddish-brown friable silty clay loam; moderate medium blocky structure; 14 to 24 inches thick.
34 inches +, reddish-yellow or reddish-brown slightly firm but friable silty clay loam to sandy clay loam extending to depths of 6 to 8 feet or more.

The soil varies from medium to strongly acid. It has a moderate content of organic matter. The several layers are easily permeable to air, moisture, and roots. The soil has a high water-supplying capacity. Both surface runoff and internal drainage are medium.

About 25 percent of this soil is somewhat coarser in texture because it has more sand in each layer. It averages somewhat lower in natural fertility, and internal drainage is more rapid.

Use and management.—Nearly all of this soil is wooded. The cover consists mainly of red oak, white oak, hickory, beech, elm, sweetgum, and some maple. The trees are of all ages, but most of them are young and small. A few trees are suitable for sawtimber or crossties. Several areas next to pastures are grazed.

The productivity of this soil is fairly high. When cleared, it is very well suited to various field crops such as corn, tobacco, small grains, lespedeza, alfalfa, and clovers. It is easy to work and to keep in good tilth. It can be injured by erosion but is easily maintained under good management.

Dexter silt loam, eroded rolling phase (5 to 12 percent slopes) (Di, 5).—This is a well-drained, friable, moderately eroded soil on terraces. It has formed in old mixed alluvium that washed from upland soils developed from loess or Coastal Plain material. In most places the terraces were covered with a thin mantle of loess.

This soil occurs on short, narrow terrace slopes between the terraces and bottom lands. Most areas are in the drainage basin of the Tennessee River, where they are associated with Shannon, Freeland, Brandon, Guin, Tigrett, and Beechy soils, and with other Dexter soils.

From 25 to 75 percent of the original surface layer has been lost, but enough remains to provide most of the plow layer in most places. The subsoil is exposed in small spots. The mixing of the surface and subsoil during cultivation has resulted in a heavy silt loam texture in places. The present surface layer is yellowish-brown or grayish-brown friable silt loam, 2 to 6 inches thick. The subsoil is yellowish-red or reddish-brown friable light silty clay loam.

The soil is medium to strongly acid and contains a fair amount of organic matter. It is readily permeable to air, water, and roots and has a high water-supplying capacity. A medium to moderately low amount of the rainfall flows away over the surface, the actual amount depending on slope and erosion. Internal drainage is medium.

About 12 percent of this unit contains enough sand to be classified as Dexter fine sandy loam. Its productivity is slightly lower than the silt loam soil, but its use and management are similar.

Use and management.—All of this soil is cleared, and most of it is used for crops and pasture. The principal crops are corn and lespedeza, but cotton, small grains, potatoes, and clovers are also grown.

This is a desirable soil for crops. It is moderately productive, well suited to many crops, and responsive to good management. It is somewhat less desirable for row crops than the eroded undulating phase because it has greater slopes and is more susceptible to erosion. Longer rotations that include legumes and soil-conserving crops are more practical for this phase. Special practices that control runoff and erosion, such as terracing, should be used when growing row crops.

Dexter silty clay loam, severely eroded rolling phase (5 to 12 percent slopes) (Dk, 6).—This well-drained, friable, brown soil on stream terraces along the larger valleys in the eastern part of the county is closely associated with Freeland, Hatchie, Tigrett, Briensburg, Shannon, Beechy, Guin, and Brandon soils, and with other Dexter soils. The parent material consists of old mixed alluvium, mainly from loess and sandy Coastal Plain material. Most, or all, of the original surface layer has been removed by erosion. The plow layer is a mixture of surface soil and subsoil and in some places consists almost entirely of subsoil material. Small, shallow gullies are common, but few are so deep they cannot be crossed with heavy implements. Between these gullies some of the original surface layer still remains. The present surface layer varies from grayish brown to yellowish brown or yellowish red in color and from silt loam to silty clay loam in texture. The subsoil is a yellowish-red or reddish-brown friable silty clay loam.

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The soil is medium to strongly acid, low in organic matter and plant nutrients, and moderate in water-supplying capacity. Erosion has lowered the absorption capacity of the soil so that runoff is medium to rapid. Internal drainage is medium.

A few acres of this unit have a clay loam or fine sandy clay loam surface layer. In other profile characteristics these small areas are similar to Dexter silt loams. This variation does not significantly differ from Dexter silty clay loam, severely eroded rolling phase, in use and management requirements. A few acres occur on steeper slopes of 12 to 20 percent. These also are similar in profile features, but their steeper slopes are more difficult to crop.

Use and management.—All of this soil has been cleared of timber and used for crops or pasture. Most of it is now idle and covered with broomsedge and native wild plants. Very little is used for farming, although it is occasionally grazed. A few acres are within game preserves.

The fertility of this soil has been greatly depleted by erosion, and it now has low productivity for both crops and pasture. In its present condition it probably can best be used and managed for pasture. Its suitability for pasture can be increased by applying organic matter, lime, and phosphorus. Many grasses and legumes will grow on this soil if it is properly prepared and managed. Among these are orchardgrass, bermudagrass, redtop, ryegrass, fescue, whiteclover, Ladino clover, lespedeza, alsike clover, and hop clover. If terraces, diversion ditches, or other means of controlling erosion are used, the soil can be maintained by using a long crop rotation that consists mainly of close-growing crops. If the soil is adequately fertilized, fair yields can be expected.

Dexter fine sandy loam, hilly phase (12 to 20 percent slopes) (De, 11).—This well-drained, friable, sandy soil occurs on the slopes of terraces. It is more sandy than the Dexter silt loam soils. The soil has developed from old general stream alluvium that washed from upland soils formed from sandy Coastal Plain and loess materials. It is inextensive but widely distributed along the larger streams in the eastern part of the county. It is associated with Freeland, Tigrett, Briensburg, Brandon, and Guin soils, and with other Dexter soils. A mixed stand of hardwood trees covers this soil.

Profile description:

0 to 1 inch, dark grayish-brown or dark-gray friable fine sandy loam.
1 to 7 inches, grayish-brown or brown very friable fine sandy loam; 5 to 10 inches thick.
7 to 32 inches, reddish-yellow, reddish-brown, or yellowish-red friable silty clay loam to fine sandy clay loam; 24 to 28 inches thick.
32 inches +, yellowish-red or reddish-yellow slightly firm but friable fine sandy loam, silty clay loam, or fine sandy clay loam; extends to depths of 8 to 10 feet or more.

This soil is strongly acid throughout the profile. It is moderately low in organic matter and fertility. The soil is readily permeable to air, moisture, and plant roots. It has a moderate water-supplying capacity. Surface runoff is medium to rapid and internal drainage is medium.

A few acres of Dexter silt loam, hilly phase, is included with this soil because of similarity in use suitability and management require-

ments. Also, a little Dexter silt loam, eroded hilly phase, has been included.

Use and management.—Nearly all areas of this soil are wooded. The stand is made up of red oak, white oak, post oak, and hickory, and some elm, maple, and yellow-poplar. Most of the salable timber has been removed, and little good sawtimber remains. The present growth varies in size and quality and includes many cull trees. Most of the cleared areas are now idle and covered with a mixed growth of broomsedge, and other native plants, briers, shrubs, and running vines. Much of this soil is included in a game refuge.

This soil occupies the steepest slopes on the terraces. It is moderately productive, but its strong slopes are moderately difficult to cultivate and conserve. Moisture supplies are fair, but in cropped areas the soil is somewhat droughty because of the rapid runoff. The soil is poorly suited to row crops, but it responds to good management and can be maintained in a long crop rotation. It is potentially good pasture. Most areas are so located that forest will be the most convenient use.

Dulac silt loam, undulating phase (2 to 5 percent slopes) (Dm, 7).—This is a moderately well drained siltpan soil of the uplands. It has formed from a layer of silt less than 3½ feet thick that lies over slowly permeable Coastal Plain material. This Coastal Plain material is usually a sandy clay but in some places is moderately firm stratified sand and clay. The soil occurs typically on broad undulating ridges, in a slightly or moderately dissected landscape. It is usually associated with Tippah, Grenada, and Providence soils, and with other Dulac soils. It is coarser than Tippah soils and has a more permeable substratum. The Providence soils, similar to the Dulac in many characteristics, have a weaker siltpan and more permeable underlying geological formations. This Dulac soil is usually in a Dulac-Hymon-Tippah association, but some areas are distributed over most of the county. The natural vegetation is oak-hickory forest.

Profile description:

0 to 1 inch, dark-gray or dark brownish-gray mellow silt loam.
1 to 6 inches, pale-brown to grayish-brown very friable mellow silt loam; 4 to 6 inches thick.
6 to 12 inches, yellowish-brown to strong-brown friable silt loam to silty clay loam; weak medium blocky structure; 6 to 10 inches thick.
12 to 28 inches, yellowish-brown or brownish-yellow friable silty clay loam, streaked with gray; weak to moderate medium blocky structure; 12 to 18 inches thick.
28 to 42 inches, siltpan of compact silt loam or silty clay loam mottled with shades of gray, yellow, and brown; 10 to 18 inches thick.
42 inches +, very firm, slowly pervious sandy clay or fine sandy clay loam material mottled with gray, yellow, and brown; thin discontinuous layer of hardened sandy material is common at the top of this layer.

The soil is strongly acid and low in organic matter. The soil material is permeable to air, moisture, and roots above the siltpan. The siltpan is only slightly permeable. Runoff is slow. Internal drainage is moderate to slow because it is restricted by the pan layer. The water-supplying capacity is moderate.

The chief variations are in depth of the silt material, thickness and compactness of the siltpan, and height of the water table that forms above the siltpan.

Use and management.—About 80 percent of this soil is covered by white oak, red oak, post oak, hickory, and some sweetgum, elm, tulip-poplar, and dogwood. Most of the sawtimber has been cut, and the present stand of young trees varies in size and quality. Most of the cleared areas are used for corn, cotton, lespedeza, and pasture. A few acres associated with soils poorly suited to crops are idle.

This is moderately productive soil, fairly well suited for general field crops. It is low in lime and organic matter and has low fertility. It is easy to cultivate and to keep in good tilth. Cultivated areas are only slightly susceptible to erosion. The siltpan causes extremes in moisture content. The moderate fertility and restricted drainage of this soil limit its use suitability. With good management, such crops as corn, cotton, sweetpotatoes, tobacco, small grains, grass, hay, and shallow-rooted legumes can be grown successfully. The soil is not suitable for alfalfa. Sericea lespedeza is well adapted, and a few farmers are using it as a soil-building pasture and hay crop.

Dulac silt loam, eroded undulating phase (2 to 5 percent slopes) (Dn, 7).—This is a moderately well drained siltpan soil on smooth uplands. The parent material is a layer of loess, 25 to 42 inches thick, underlain by slowly pervious sandy clay. The soil is like the undulating phase of Dulac silt loam, except that erosion has removed 25 to 75 percent of its original surface soil. In some places all the plow layer is in the original surface soil, but in others the plow layer includes a part of the subsoil. The present surface layer is a pale-brown, grayish-brown, or yellowish-brown friable silt loam. The subsoil, a yellowish-brown to brownish-yellow friable silty clay loam, is underlain by a compact siltpan at a depth of about 2 feet.

This soil occupies ridge crests in gently rolling terrain. It is widely distributed in the central and eastern parts of the county. It is associated with Grenada, Tippah, Providence, Lexington, Cuthbert, Briensburg, and Beechy soils, and with other Dulac soils.

The soil is strongly acid, low in organic matter, and low in fertility. The surface soil and upper subsoil are permeable to air, roots, and moisture, but the siltpan is only very slightly permeable. Surface drainage is moderately slow. Drainage through the soil is moderately slow and some water accumulates above the siltpan. The soil has a moderate water-supplying capacity.

Use and management.—All of this soil is cleared and most of it is used for crops and pasture. About 30 percent is idle or in poor-grade volunteer pasture. Crop yields are about medium.

The soil is fairly well suited to most of the common crops grown in the county. It is easy to work and moderately easy to conserve. The fertility is low, and the water-supplying capacity is moderately low. Most crops need fertilizer on this soil, and some cannot be grown without it. Alfalfa, even under a high level of management, does not yield satisfactorily. Sericea lespedeza, however, is grown successfully with little or no fertilization. The soil is thought to be better suited to small grain crops than to corn or crops that mature late in summer or fall. If properly fertilized, it is probably better suited to cotton than to the other common field crops.

Dulac silt loam, rolling phase (5 to 12 percent slopes) (Do, 8).—This is a moderately well drained siltpan soil of the uplands. It has

a pale-brown to grayish-brown very friable silt loam surface soil and a yellowish-brown or brownish-yellow friable silty clay loam subsoil. The subsoil is underlain by a siltpan at a depth of about 2 feet. The parent material was a shallow mantle of windblown silt deposited upon firm, slowly pervious, sandy clay Coastal Plain material. The soil occurs on slightly dissected rolling ridge slopes or ridge crests, mostly in the Dulac-Hymon-Tippah association. Closely associated with this soil are the Tippah, Providence, Briensburg, and Tigrett soils, and other soils of the Dulac series. The forest cover consists of mixed hardwoods, chiefly oaks and hickory.

This soil is strongly acid and has a low content of organic matter. The material above the siltpan is permeable to roots, air, and moisture. Roots do not penetrate the siltpan, and water penetrates it very slowly. Runoff is moderately slow, and internal drainage is slow. The water-supplying capacity is moderate.

In a few areas the pan is finer textured and more dense and the underlying geologic material occurs at depths of about 5 or 6 feet. A few acres included in this unit are on steeper, narrow slopes of 10 to 20 percent and have more rapid runoff. Also included are several small areas where the upper layers have been mixed by tillage and some soil material has been lost through erosion.

Use and management.—Except for 32 acres, this soil is wooded by red, white, and post oaks, hickory, and a scattering of elm, yellow-poplar, and sweetgum. Most of the stand is immature and variable in size and in potential value. Only a few salable trees remain. The cleared areas are farmed with associated soils for corn, small grains, and lespedeza.

This soil is suitable for growing most of the general field crops of the county. The rolling slopes make this soil harder to work than the undulating phase of Dulac silt loam. Also, cleared areas are more likely to lose soil material by erosion. The soil is moderately easy to work but moderately hard to conserve. The natural fertility is low, and fertilizers will be needed for good crop yields.

Dulac silt loam, eroded rolling phase (5 to 12 percent slopes) (Dp, 8).—This moderately well drained siltpan soil of the uplands has developed from a thin layer of loess underlain by slowly permeable Coastal Plain materials. The soil occupies mild, undulating to gently rolling slopes, mainly in the Dulac-Hymon-Tippah association. Its chief associates are Briensburg, Beechy, Grenada, Tippah, Providence soils, and other soils of its own series. A substantial part of the original surface layer has been carried away by erosion. The amount lost varies greatly within short distances, but for most of the area the plow layer is still within the original surface layer. Small patches so severely eroded that the subsoil is exposed are common in most areas. The present surface layer is a pale-brown or grayish-brown to yellowish-brown friable silt loam. The subsoil, a yellowish-brown to brownish-yellow friable silty clay loam, is underlain by a compact siltpan at a depth of about 2 feet.

The soil is low in organic matter and strongly acid. The water-supplying capacity is low. Surface runoff is medium, and internal drainage is moderately slow. The upper layers are permeable to air, moisture, and roots, but the siltpan is only slightly permeable.

The several layers of the soil profile vary in depth, and the siltpan varies in compactness. Several small areas of Grenada silt loam, eroded rolling phase, are included in this unit. These areas differ primarily in their greater depth to the underlying Coastal Plain material.

Use and management.—All of this soil is cleared, and most of it is used for crops and pasture. Some fields are idle or in intermittent pasture. Corn and lespedeza are the principal crops, but cotton, small grains, sweetpotatoes, and legumes are grown also.

The physical properties of this soil favors production of the crops commonly grown, but the productivity is low. The soil is moderately easy to work under proper moisture conditions but is moderately difficult to conserve. Slopes are mild enough for heavy farm implements, but the soil is more susceptible to erosion than the eroded undulating phase of Dulac silt loam. The soil responds to management and is suitable for corn, cotton, soybeans, oats, wheat, barley, lespedeza, and white, red, and alsike clovers. Because of the siltpan and restricted drainage, this soil is not suitable for fruit trees or alfalfa. Amendments are needed for good yields of most crops, and crops such as red clover cannot be grown without them.

Dulac silty clay loam, severely eroded rolling phase (5 to 12 percent slopes) (Dr, 9).—This is a severely eroded moderately well drained siltpan upland soil. It formed in a shallow mantle of loess, underlain at depths of 28 to 42 inches by slowly permeable Coastal Plain material. It occurs on mild slopes in a rolling landscape, principally in the Dulac-Hymon-Tippah association. It is associated mainly with Beechy, Briensburg, Grenada, Providence, and Tippah soils, and with other Dulac soils. This is the most extensive of the Dulac soils.

This soil has lost most of its original surface layer. Mixing of the original surface soil and subsoil has produced a heavy-textured surface layer in most places. Shallow gullies have cut into the subsoil at close intervals and some of the deeper gullies cannot be crossed with heavy machinery. Some of the original surface soil remains between the gullies.

The plow layer is a complex of grayish-brown, pale-brown, and yellowish-brown, friable, heavy silt loam or silty clay loam. The subsoil is yellowish-brown or brownish-yellow friable silty clay loam splotched in the lower part with light gray and strong brown. A siltpan of mottled gray, yellow, and brown compact silt loam or silty clay loam is at depths of 20 to 24 inches.

This soil is very low in organic matter, plant nutrients, and water-supplying capacity. It is strongly to very strongly acid. Runoff is moderately rapid, and internal drainage is moderately slow. The upper part of the soil is readily permeable to air, moisture, and roots, but the siltpan is only slightly permeable.

Some areas of this soil near the Grenada soils have the underlying sandy material 4 to 5 feet below the surface. This is deeper than for most of the unit, but because of the small acreage and similar agricultural value, these areas are included with this soil.

Use and management.—All of this soil is cleared and has been used for field crops. Nearly all of it is now idle or in unimproved pasture. Bare spots are common and in many places the pasture is sparse and

of poor quality. Only a few areas are used for crops, and yields are very low.

Erosion has severely damaged the soil and reduced its productivity to a very low level. The soil is hard to cultivate and to keep in good tilth. The very low supplies of mineral plant nutrients, humus, and lime and the danger of further erosion limit its suitability for crops. Trees do poorly and grow slowly.

The soil probably is best used for pasture. If the soil is well managed and properly fertilized, bermudagrass, orchardgrass, redtop, ryegrass, fescues, lespedeza, and whiteclover can be established. If pastures are well managed and protected by terraces or similar means of water control, the soil, after a few years in pasture, may again be used successfully for a rotation of crops.

Dulac-Cuthbert complex, hilly phases (12 to 25 percent slopes) (Dt, 15).—This complex consists of Dulac and Cuthbert soils so intricately associated that it is not practical to outline the individual units on the soil map. The Dulac soils were derived from a layer of loess, less than 42 inches thick, underlain by slowly permeable sandy clay. The Cuthbert soils have developed from tough sandy clay containing thin lenses of clay. This complex covers small areas in the central part of the county, chiefly in the Dulac-Hymon-Tippah association. It is associated chiefly with Dulac, Ruston, Lexington, and Briensburg soils. A deciduous forest vegetation covers the complex.

Profile descriptions:

Dulac silt loam—
- 0 to 1 inch, dark-gray or dark brownish-gray mellow silt loam stained by decomposed forest litter.
- 1 to 5 inches, pale-brown to grayish-brown very friable mellow silt loam; 3 to 5 inches thick.
- 5 to 10 inches, yellowish-brown to strong-brown friable silt loam to silty clay loam; 4 to 6 inches thick.
- 10 to 24 inches, yellowish-brown or brownish-yellow friable silty clay loam splotched in the lower part with gray; 12 to 16 inches thick.
- 24 to 36 inches, siltpan of compact silt loam or silty clay loam mottled with yellow, gray, and brown; 6 to 14 inches thick.
- 36 inches +, very firm slowly permeable sandy clay material mottled with gray, red, and yellow; has thin layers of indurated fine-grained sandstone along the upper part of the formation.

Cuthbert fine sandy loam—
- 0 to 1 inch, dark-gray very friable fine sandy loam stained with organic matter.
- 1 to 8 inches, grayish-yellow, brownish-yellow, or yellow very friable fine sandy loam or loamy fine sand; 6 to 12 inches thick.
- 8 to 20 inches, yellowish-red or reddish-yellow plastic fine sandy clay with some interbedding of thin platy indurated sandy material; 10 to 15 inches thick.
- 20 to 60 inches +, reddish-yellow or yellowish-red, tough, very plastic fine sandy clay or clay splotched with gray, brown, yellow, and red.

These soils are strongly to very strongly acid. They are low in organic matter and plant nutrients. The upper layers are permeable to air, water, and roots, but the siltpan and clayey subsoil materials are only slowly permeable. The water-supplying capacity is low. Surface runoff is rapid, and internal drainage is moderately slow.

In places the surface texture of the Cuthbert soil is modified by

silty material from the Dulac. Small sandstone fragments are distributed over the surface and throughout the soil, and a few small spots have enough stones to interfere with tillage. The depth of the Dulac soil to the underlying geologic material varies within short distances.

Included with this separation are a few small areas of Tippah and Susquehanna soils. Tippah soils have profiles similar to those of Dulac soils but are underlain by very plastic, dense, tough clay. The Susquehanna soil is like the Cuthbert except that it was derived from beds of heavy very plastic clays. A few of the areas in this separation consist almost entirely of the Dulac soil.

Use and management.—All areas of this unit are in woods. The woodland has been cut over many times and very little salable timber remains. The trees are principally post oak, blackjack oak, red oak, some white oak, and hickory.

This complex is poorly suited to crops or pasture because of its steep slopes, low productivity, and strong tendency to erode when cultivated. It is difficult to work and conserve. Some areas are hard to reach and are surrounded by other hilly soils unsuited to crops or pasture. The Dulac soil of this complex would be suitable for many general farm crops, except for its strong slopes, which make it unsuited to the intensive use and short crop rotations. It can be used for pasture, but the inclusion of the less fertile, less suited Cuthbert soil reduces its grazing value considerably. Probably the most practical use is for forest.

Dulac-Cuthbert complex, eroded hilly phases (12 to 25 percent slopes) (Du, 15).—This complex contains moderately eroded Dulac and Cuthbert soils. The soils occur in such an intricate pattern that they cannot easily be separated on the soil map. A considerable part of the original surface layer of each soil has been carried away by erosion. The quantity removed varies within short distances, but enough of the original layer generally remains to make up most of the plow layer. Small severely eroded patches in which the subsoil is exposed are fairly common. The Cuthbert areas show the greater loss of soil material and other effects of erosion. A few small gullies have been cut in both soils. This unimportant complex occurs mostly in the Dulac-Hymon-Tippah soil association.

These soils of this complex are strongly to very strongly acid and are low in lime and plant nutrients. The surface soil and subsoil layers are permeable to air, water, and roots, but the compact layers are very slowly permeable. Surface runoff is rapid, and internal drainage is moderate. Internal drainage is definitely restricted by the compact layers; most drainage moves laterally above the slowly pervious material. These soils have a low water-supplying capacity. The Dulac soil has no stones or gravel, but fragments of sandstone are scattered irregularly on the surface of the Cuthbert soil, and in its upper layers.

About 13 percent of this complex consists of areas composed of intricately associated bodies of Tippah and Susquehanna soils. The Tippah is like the Dulac in profile, but is underlain by heavy plastic Coastal Plain clays like those beneath the Susquehanna soils. The Susquehanna differs from Cuthbert mainly in having a more plastic,

heavier, less sandy clay subsoil. Some areas, about 5 percent of the unit, contain only Dulac soils.

Use and management.—All areas of this complex were cleared of woods and formerly used for crops and pasture. Nearly all of this complex is now idle. A few acres are used sometimes with adjoining soils for pasture. The pasture is sparse and of poor quality. The few crops grown produce low average yields.

The soils of this complex are poor for crops and pasture, chiefly because of their hilly relief, eroded condition, low water-supplying capacity, poor tilth, and low fertility. They are difficult to work and to conserve. The soils are easily damaged by erosion. Growing of row crops increases the problem of conservation. Areas dominated by Dulac soils can be used for adapted pasture crops, but the Cuthbert soils are poorly suited to pasture. Unless urgently needed for pastures, this complex is best used for growing timber.

Dulac-Cuthbert complex, severely eroded hilly phases (12 to 25 percent slopes) (Dv, 15).—This complex consists predominantly of Dulac silty clay loam and Cuthbert clay loam, which are so much intermingled that it is not practicable to separate the individual areas. This complex has been more damaged by erosion than other phases of the Dulac-Cuthbert complex. Most of the original surface layer, and in places, some of the upper subsoil material have been removed from the soils by erosion. The plow layer consists mainly of subsoil material, so it is much heavier in texture than the original surface layer and highly variable in color. The plow layer varies from pale brown or grayish brown to yellowish red.

The soils of this complex are strongly to very strongly acid, low in fertility, and very low in water-supplying capacity. The surface layer and upper subsoil are permeable to roots, air, and moisture, but the underlying siltpan and clay layers are very slowly permeable. The Dulac soil is free of gravel and stones, but fragments of sandstone are distributed on and throughout the Cuthbert. A few acres of severely eroded Dulac, Susquehanna and Tippah soils are included in this complex and have similar land use problems.

Use and management.—All areas of this complex have been cleared for crops, but nearly all of them are now idle. A few acres are occasionally used for the scant grazing they provide. Broomsedge grows on much of this complex.

The soils of this complex are very poor for crops or pasture because of their low fertility, steep relief, eroded condition, and very low water-supplying capacity. They are extremely likely to erode when used for intertilled crops or when left without a plant cover. They are difficult to conserve and to keep in good tilth. The slopes are not suitable for machinery. These soils are associated with other steep soils, which are also of limited use for crops and pasture. On practically all farms this complex is best used for forestry.

Dyer silt loam (1 to 5 percent slopes) (Dy, 13).—This is a poorly drained, light-colored silty soil of the colluvial lands. It occurs in narrow bands at the base of upland slopes, on the outwash fans at the mouths of small drainways, and on narrow, mildly sloping areas along intermittent streams. It differs from Beechy silt loam mainly in occupying sloping positions above flood stage and in being derived

from local alluvium or colluvium rather than from general alluvium. Most of the soil materials were washed from nearby upland soils derived from loess. Areas of the soil are small and are widely distributed over the county, principally in narrow valleys or ravines. It occurs in association with Ruston, Lexington, Tigrett, Briensburg, Hymon, and Beechy soils. The forest was hardwoods, chiefly water-tolerant oaks, hickory, ash, beech, soft maple, sweetgum, willow, and birch.

Profile description:

0 to 7 inches, light brownish-gray very friable mellow silt loam; 5 to 8 inches thick.
7 to 11 inches, friable light brownish-gray silt loam splotched with gray and strong brown; 4 to 10 inches thick.
11 to 40 inches, light-gray or light brownish-gray friable silt loam with few to many strong-brown mottles; 25 to 50 inches or more thick; underlain by mottled silty material similar to the alluvium of the nearby flood plains.

The soil is strongly to very strongly acid throughout and is moderate to low in organic matter. It is permeable, but penetration of air and roots is restricted to the upper part of the soil by the high water table. Surface runoff is medium to slow, and internal drainage is slow. The wetness of this soil is caused by seepage from nearby upland slopes. The water-supplying capacity is very high. A few soft and hard iron concretions are present through the soil.

Some variations in color, depth, and organic-matter content occur in the surface layer. The subsoil, in places, is sometimes interbedded with a thin layer of sandy material that increases permeability. Small patches of Briensburg silt loam and Beechy fine sandy loam are intricately associated with this soil in places.

Use and management.—Practically all of this soil is cleared. Most of it is used for corn, lespedeza, hay, and pasture. About 10 percent is idle or serves as intermittent pasture. Areas of this soil are usually farmed along with the better drained associated soils.

The soil is moderately productive of certain crops, and under proper moisture conditions is moderately easy to work. It is not likely to erode, but it is moderately difficult to drain. Although the soil is otherwise suitable for crop production, poor internal drainage limits its use mostly to summer annual crops or those that have a short growing season. Small grains are poorly suited to it. They may be damaged by excess water and by alternate freezing and thawing during winter. This is a poor soil for deep-rooted crops such as alfalfa. Corn, cotton, and tobacco require careful management for successful results. Hay crops, soybeans, sorghum, and pasture plants are well suited to this soil and yield well on it. The use suitability can be broadened and average yields can be increased by artificial drainage and by applying lime and commercial fertilizer.

Dyer fine sandy loam (1 to 5 percent slopes) (Dx. 13).—This is a poorly drained light-colored colluvial soil along footslopes, on sloping outwash fans at mouths of small streams emptying into larger valleys, or on gently sloping areas along narrow drainageways. It has formed from mixed local colluvium and alluvium that washed from adjacent uplands. The soils from which the alluvium washed were derived from silty loess or sandy Coastal Plain material.

This soil differs from Beechy fine sandy loam in occupying positions above ordinary overflow and having somewhat better surface drainage. It differs from Dyer silt loam chiefly in having a fine sandy loam texture.

This is a minor soil, made up of small sized areas widely scattered throughout the county in association with Tigrett, Briensburg, Hymon, Ruston, Lexington, and Beechy soils. The native forest is chiefly water-tolerant oaks, sweetgum, soft maple, hickory, beech, elm, and ash.

The surface layer is very friable brownish-gray or pale-brown fine sandy loam, loam, or loamy sand, 5 to 8 inches deep. It grades quickly into similar material that is light brownish gray to light gray and has gray and strong-brown mottles. At 15 to 20 inches this last-named layer ends. Below it is gray or light-gray friable fine sandy loam or loam that has many strong-brown mottles and contains occasional thin interbedded layers of friable mottled silt loam. This gray layer extends to the underlying residuum or alluvium, which is at depths of 3 to 5 feet.

Surface runoff is medium to slow, and internal drainage is slow. The upper layer has fair aeration, but the lower layers are saturated much of the time. Roots develop mostly in the upper layer; few grow into the mottled zone. The soil is strongly to very strongly acid and moderate to low in organic matter.

Use and management.—About 75 percent of the soil is cleared. Most of the cleared area is used for crops or pasture. It is cultivated with associated areas of better drained soils, principally for corn but to some extent for lespedeza, sorghum, hay, and pasture.

The soil is moderately productive of the crops to which it is suited and is moderately easy to work and to keep in good tilth. Poor internal drainage interferes with the development of deep-rooted plants, and usually delays seedbed preparation and planting in spring. During dry summers, crops on this soil normally do better than on better drained upland soils. This is a suitable soil for corn, sorghum, and cowpeas, and for hay or pasture. Yields average higher than on Beechy fine sandy loam.

This soil responds to practices that increase fertility. Its suitability for crops can be widened by artificial drainage and by applying lime, organic matter, and fertilizer.

Egam silty clay loam (0 to 3 percent slopes) (Eg).—Kentucky Reservoir has permanently flooded this soil. It was a moderately well drained to well drained soil on the bottom lands along the Tennessee River. It was distinguished especially by its fine texture and compact or very firm consistence. The parent material came chiefly from various limestones, sandstones, shales, and the micaceous rocks of the Appalachian Highland, but small amounts were from Coastal Plain formations. The parent material apparently was deposited in slack-water areas that were subject to flooding.

Profile description:

0 to 12 inches, dark grayish-brown to very dark grayish-brown firm silty clay loam; 8 to 16 inches thick.

12 to 26 inches, grayish-brown to yellowish-brown very firm or compact silty clay loam; 10 to 20 inches thick.

26 inches +, grayish-brown firm silty clay loam splotched with light gray; 10 feet or more thick.

This soil apparently was moderately high in organic matter, medium acid, and high in plant nutrients. External drainage was slow, and internal drainage moderately slow. The compact subsoil made the soil more droughty than most of the associated soils of the bottom lands. The clayey plow layer dried more slowly than the same layer of the associated soils, and was more difficult to till.

Use and management.—The total area was about 550 acres. Almost all of it was cleared and used chiefly for corn. Lespedeza, soybeans, cowpeas, and oats were the other more common crops. Under average conditions, corn yielded about 40 bushels and lespedeza hay about 1.5 tons an acre.

Ennis silt loam (0 to 2 percent slopes) (En, 1).—This is a well-drained, brown, friable, productive soil of the flood plains. It consists of mixed alluvial materials that were washed from soils derived from cherty limestone and loess. The material from cherty limestone apparently predominates. Although sometimes flooded, the soil is well drained. Areas of this unit cover only 116 acres, of which 92 acres was permanently flooded by Kentucky Reservoir. They are located in the northeastern part of the county, where they are associated with areas of Mountview, Bodine, and Paden soils. Wooded areas have a mixed growth of oaks, hickory, elm, beech, soft maple, sweetgum, and sycamore.

Profile description:

0 to 12 inches, grayish-brown, brown, or dark-brown mellow very friable silt loam; 8 to 15 inches thick.
12 to 30 inches, brown or pale-brown friable silt loam; 20 to 40 inches thick.
30 inches +, brown or yellowish-brown friable silt loam or heavy silt loam, interbedded in places with chert or sandy material; extends to depths of 10 feet or more.

The soil is medium to strongly acid. It is moderate in content of organic matter. All parts of the soil are readily permeable to air, water, and roots. The water-supplying capacity is very high. Surface runoff is slow, and internal drainage is moderate. A few water-worn chert fragments are on and in the soil, but in only a few spots are they numerous enough to interfere with tillage.

Use and management.—Only 24 acres of this soil is above the high-water level of Kentucky Reservoir. This acreage is cleared but is not used for crops. It is owned by the Tennessee Valley Authority and is now used as a wildlife refuge. The soil is highly productive, easy to work, and very easy to conserve. It has good natural drainage and an excellent water-supplying capacity. Some risk would be involved in growing winter grains because the soil may be flooded. The soil is well suited to corn. Lespedeza, soybeans, tobacco, red clover, grass hays, and vegetable crops can be grown successfully.

Freeland silt loam, level phase (0 to 2 percent slopes) (Fr, 7).—This is a moderately well drained siltpan soil of the smoother terrace lands. The old mixed alluvium from which the soil developed was washed from uplands covered by loess and Coastal Plain materials. It occupies small areas and is associated with the Dexter, Hatchie, and Almo soils. This is a minor soil, and most of it is in the Freeland-

Hatchie-Providence soil association. The native vegetation is mainly oak-hickory forest.

Profile description:

0 to 1 inch, dark-gray or dark grayish-brown mellow silt loam.
1 to 8 inches, grayish-brown to pale-brown very friable mellow silt loam; weak medium crumb structure; 6 to 8 inches thick.
8 to 26 inches, yellowish-brown or brownish-yellow friable silty clay loam; weak fine to medium blocky structure; 12 to 18 inches thick.
26 to 38 inches, siltpan of moderately compact silt loam or silty clay loam; contains varying amounts of light-gray and strong-brown mottles and some dark-colored concretions; 10 to 12 inches thick.
38 inches +, pale-brown or grayish-brown moderately firm silt loam to silty clay loam streaked irregularly with light gray and strong brown; 2 to 10 feet thick.

This soil is medium to strongly acid. It is low in organic matter and moderate in water-supplying capacity and fertility. Air, water, and roots penetrate the surface and upper subsoil layers readily, but the siltpan is only slightly permeable. Surface runoff is slow because a considerable part of the rainfall enters the soil. Internal drainage is moderate to moderately slow.

Use and management.—About 45 percent of this soil is in woods, and the rest is open land used mostly for general farm crops and pasture. Corn, cotton, and lespedeza are the principal crops grown.

This is a moderately productive soil for most crops common to the region. Under proper moisture conditions it is easy to work and to keep in good tilth. Because the soil is nearly level, heavy farm machinery is suitable and erosion danger is slight. Cultivated areas have lost very little soil compared to that lost from Freeland silt loam, eroded undulating phase.

The soil warms up a little slowly in spring because of its slow internal drainage. It provides more water for plants, however, during the dry summer months. Lime, organic matter, and plant nutrients must be applied to maintain high production of crops and pasture. This soil responds to good management and can be used in short rotations. Corn, cotton, tobacco, lespedeza, sericea lespedeza, sweetpotatoes, red clover, and whiteclover can be grown successfully. Alfalfa is not well suited but can be grown if a high level of management is maintained. Even with good management, the stand generally does not last so long as on the well-drained Dexter soils. Most pasture grasses and legumes grow on this soil, and yields can be increased by using fertilizer. This is one of the better soils of the county for general agriculture.

Freeland silt loam, undulating phase (2 to 5 percent slopes) (Fs, 7).—This moderately well drained, yellowish-brown, siltpan soil occurs on stream terraces (pl. 3, *B*). It developed from old mixed alluvium consisting of loess and Coastal Plain materials or from a thin deposit of loess overlying old mixed alluvium. It is closely associated with the Dexter, Hatchie, Almo, Hymon, and Beechy soils. Most areas occur on terraces along Holly Fork Creek and Blood and Big Sandy Rivers, but small areas are along most of the larger streams. The largest acreage is in the Freeland-Hatchie-Providence soil association. The native vegetation was mostly oak-hickory forest.

Profile description:

0 to 1 inch, dark-gray or dark brownish-gray mellow silt loam.
1 to 7 inches, grayish-brown or pale-brown, mellow, very friable silt loam; weak medium crumb structure; 5 to 7 inches thick.
7 to 24 inches, yellowish-brown or brownish-yellow friable silt loam to heavy silt loam; weak, fine to medium blocky structure; 12 to 18 inches thick.
24 to 38 inches, siltpan of brownish-yellow or yellowish-brown moderately compact silt loam or silty clay loam streaked and splotched with light gray and strong brown; 12 to 20 inches thick.
38 inches +, pale-brown or grayish-brown, moderately firm, friable clay loam or silty clay loam streaked lightly with light gray and strong brown; 2 to 10 feet thick.

This soil is medium to strongly acid, low in organic matter and plant nutrients, and moderate in water-supplying capacity. The surface soil and subsoil layers are free of gravel, but some gravel is in the material below the siltpan. The surface soil and subsoil layers are readily permeable to air, water, and roots, but the siltpan is only slightly permeable. Surface runoff is medium and internal drainage is moderately slow.

A few small areas in the eastern part of the county are more sandy in the upper layers. Several areas consist entirely of this sandier soil, but others are a complex with the Freeland silt loam. These sandy variations are somewhat better drained and have a slightly lower water-supplying capacity.

Some of the cleared cultivated areas of this silty soil show minor variations in color, thickness of layers, and content of organic matter. A very small amount of erosion has taken place on these cleared areas. Also included with this soil are some areas of Dexter and Hatchie soils too small or too intricately mixed with this soil for separation on the map.

Use and management.—About half of this soil is covered by hardwood trees. Most of the cleared land is used for lespedeza, corn, cotton, and pasture. A few acres are idle, and about 10 percent is used for miscellaneous crops.

The soil is well suited to crops and pasture. It is moderately easy to conserve and to keep in good tilth. It is easy to work. The content of humus is low. Fertility and water-supplying capacity are moderate to low.

The soil is moderately productive of the commonly grown crops in this county and is considered desirable for farming. The slow internal drainage restricts its suitability for use, and the siltpan inhibits root growth. The relief is mild and favors the use of heavy implements.

Corn, small grains, lespedeza, sweetpotatoes, cotton, tobacco, and garden vegetables can be grown successfully in short rotations. Without adequate fertilization and good management, however, yields of all crops are moderate. Legumes such as red, white, and crimson clovers are well suited to the soil. Even under good management that includes liming and fertilizing, alfalfa is short-lived because of the siltpan and restricted drainage. The soil is well suited to pasture crops, but fertilizer is needed.

Freeland silt loam, eroded undulating phase (2 to 5 percent slopes) (Ft, 7).—This is a moderately well drained siltpan soil on smooth stream terraces. Some of the original surface layer, including the thin accumulation of organic matter, has been eroded away. The

original surface layer still is the plow layer in most places, but in small, irregular patches all of the former surface is gone and the subsoil is exposed.

The present surface layer consists of grayish-brown, pale-brown, or yellowish-brown friable silt loam. The subsoil is a yellowish-brown to brownish-yellow friable silty clay loam, underlain at a depth of about 2 feet by a weak siltpan.

This soil occurs on the larger terraces of the major streams in close association with Dexter, Hatchie, and Almo soils, and other Freeland soils. It is the most extensive of the Freeland soils, and the largest acreage of it is in the Freeland-Hatchie-Providence soil association.

The soil is medium to strongly acid. It is low in organic matter and low in fertility. The water-supplying capacity is moderate. The surface soil and subsoil layers are readily permeable to air, roots, and water, but the siltpan is only slightly permeable. Surface runoff is medium, and internal drainage is moderately slow. The upper soil layers are free of gravel, but some gravel occurs in the substratum.

About 150 acres mapped in this unit have a fine sandy loam or loam surface texture and have somewhat more sand in the subsoil. They are similar in productivity and management requirements, however. The intermixing of surface and subsoil material in cultivation has caused minor variations in color and texture in places.

Use and management.—All of this soil has been cleared of forest, and most of it is now cultivated. A few acres located on islands in Kentucky Reservoir or within the boundary limits around this lake are now used as a game refuge. Most of the soil, however, produces corn, cotton, hay, and pasture. Lespedeza is the principal hay crop but white, red, and crimson clovers are important minor crops. About 10 percent of the soil is used for miscellaneous crops, and a similar amount is idle.

This soil is well suited to most of the common crops except alfalfa and other legumes. The supplies of lime, organic matter, and mineral plant nutrients are moderately low to medium. The productivity of the soil is only moderate, but readily can be increased by good management, including adequate use of amendments. The soil is easy to work and moderately easy to conserve and to keep in good tilth. Moisture is normally adequate for crops, although some water may accumulate over the siltpan in wet seasons. The soil can be plowed reasonably early, and the upper layers generally warm up in time for planting in spring.

The undulating to nearly level relief, silty texture, and friable consistence favor the use of heavy farm equipment. The soil is suitable for short crop rotations and intensive farming practices. Many areas of this soil are large enough for entire fields; but some are so mixed with other soils as to be influenced by their management requirements. Pasture crops do well, and yields may be profitably increased by using fertilizer. Fruit trees are not well suited, because of the impeded drainage and siltpan. Truck crops and gardens grow successfully. This is one of the better soils in the county for agriculture.

Freeland silt loam, rolling phase (5 to 12 percent slopes) (Fu, 8).—This is a moderately well drained siltpan soil on stream terraces.

Areas are widely distributed along most of the large stream terraces. They are small and are closely associated with the Dexter, Hatchie, Almo, Hymon, and Beechy soils. Most of the acreage is in the Freeland-Hatchie-Providence soil association.

The soil profile is like that of Freeland silt loam, undulating phase, except that the layers are slightly thinner. The upper inch or so is darkened by organic matter and is underlain by grayish-brown to pale-brown, smooth, very friable silt loam to depths of 6 or 7 inches. The subsoil is yellowish-brown to brownish-yellow friable silty clay loam underlain at about 22 inches by a weak siltpan.

The soil is medium to strongly acid, low in organic matter, and moderate in plant nutrients and water-supplying capacity. The upper layers of the soil are readily permeable to roots, moisture, and air, but the siltpan is only very slowly permeable. No gravel is present above the siltpan.

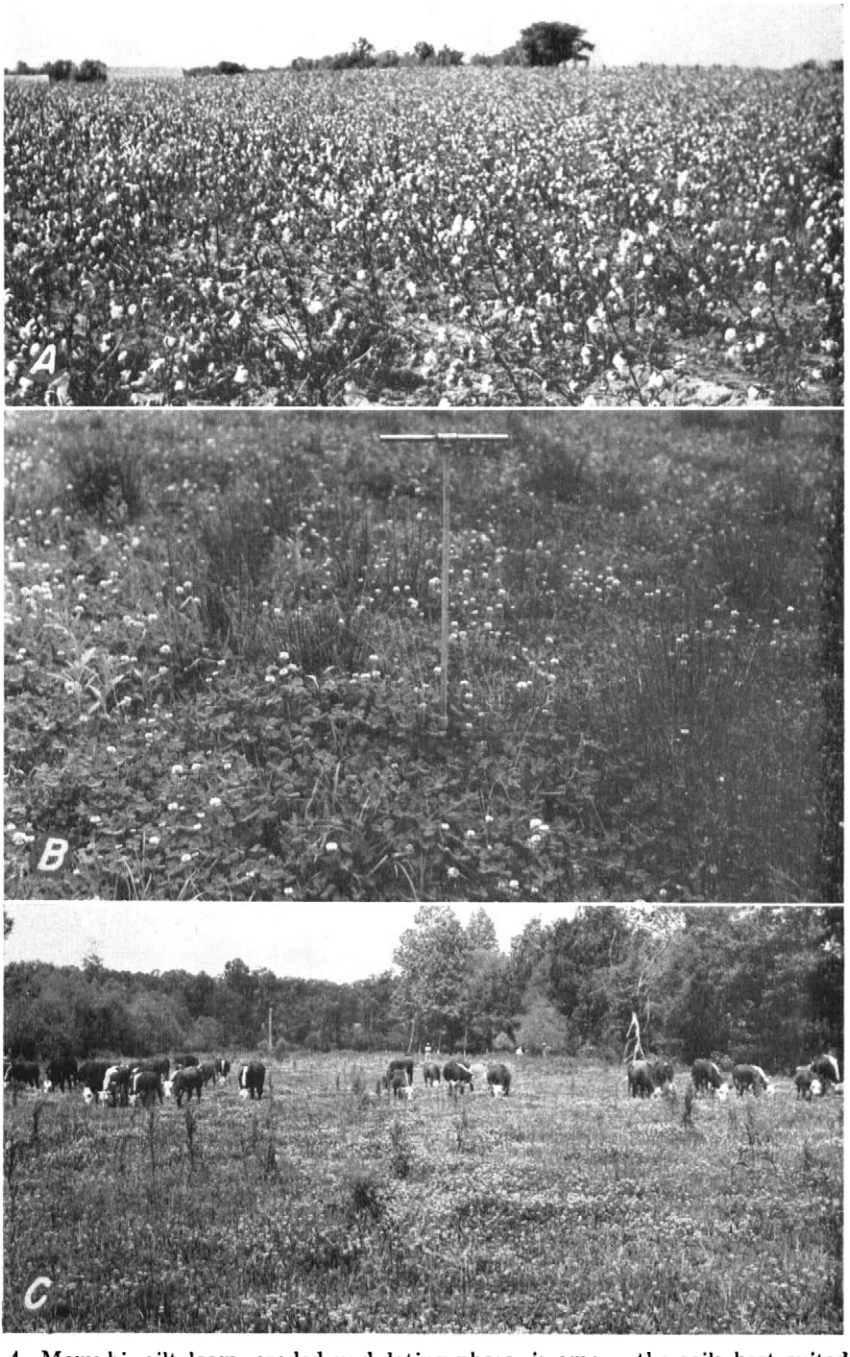
On a few acres that have been cleared and cultivated, some mixing of the upper layers has resulted in minor variations in color and humus content. Erosion on these areas is insignificant. A few acres have a fine sandy loam surface soil and a sandier subsoil than the rest of the unit. This variation is slightly lower in fertility and water-supplying capacity.

Use and management.—About 85 percent of this soil is in woods, mostly red oak, white oak, post oak, and hickory. All areas have been cut over several times and now support a stand of small to medium trees. Cleared areas are either in pasture or used with adjoining soils for cotton, corn, and hay.

This soil is physically well suited for growing most of the common crops of the region. It has stronger slopes than the undulating phase of Freeland silt loam and therefore is more susceptible to erosion when cleared and cultivated. It is moderately easy to work, but not so well suited to the use of heavy farm implements as the undulating phase. It is moderately difficult to conserve. Surface runoff and internal drainage are medium. Enough water is usually retained for normal plant growth. The soil is best suited for moderately long rotations that include close-growing crops, legumes, and grasses. It is well suited for pasture, and can readily be improved with fertilizer. Water control is necessary for growing clean-cultivated crops. Most areas of this soil are small and scattered and have no large acreage on any one farm. Their use is influenced by the uses and practices on adjoining soils.

Freeland silt loam, eroded rolling phase (5 to 12 percent slopes) (Fx, 8).—This is a moderately well drained, moderately eroded soil on stream terraces. It is characterized by a siltpan at a depth of about 2 feet. It has developed from old mixed alluvial sediments that washed from uplands underlain by loess and Coastal Plain soils, or from a thin layer of loess over the alluvium. The soil is on terraces of the larger streams of the county; it is associated with Dexter, Hatchie, and Almo soils.

From 25 to 75 percent of the original surface layer, including most of the organic matter, has been lost by erosion. The surface soil and upper subsoil are somewhat mixed because of cultivation. In small scattered patches in many areas, the original surface layer is entirely



A, Memphis silt loam, eroded undulating phase, is among the soils best suited to cotton.
B, Whiteclover on Beechy silt loam. This 15-year-old pasture is sometimes flooded.
C, Beef cattle on clover-and-grass pasture on Beechy silt loam.

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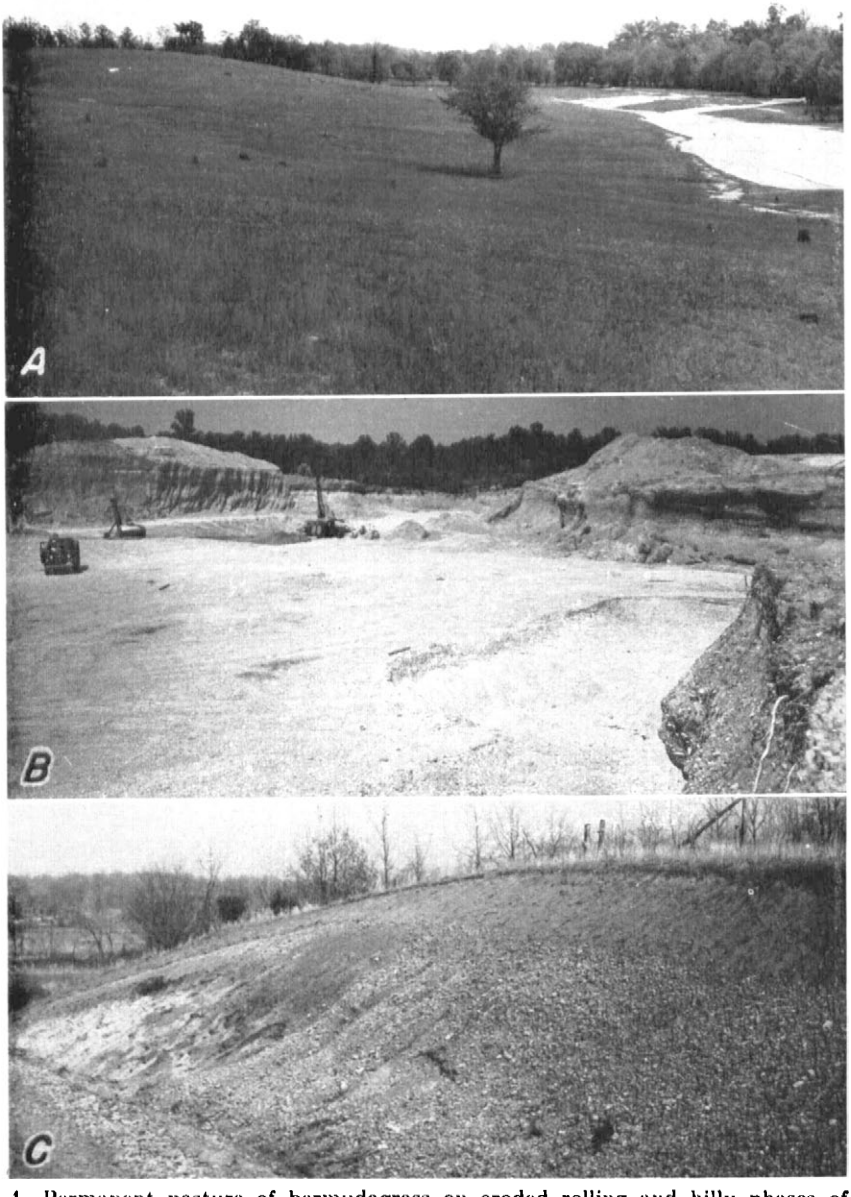
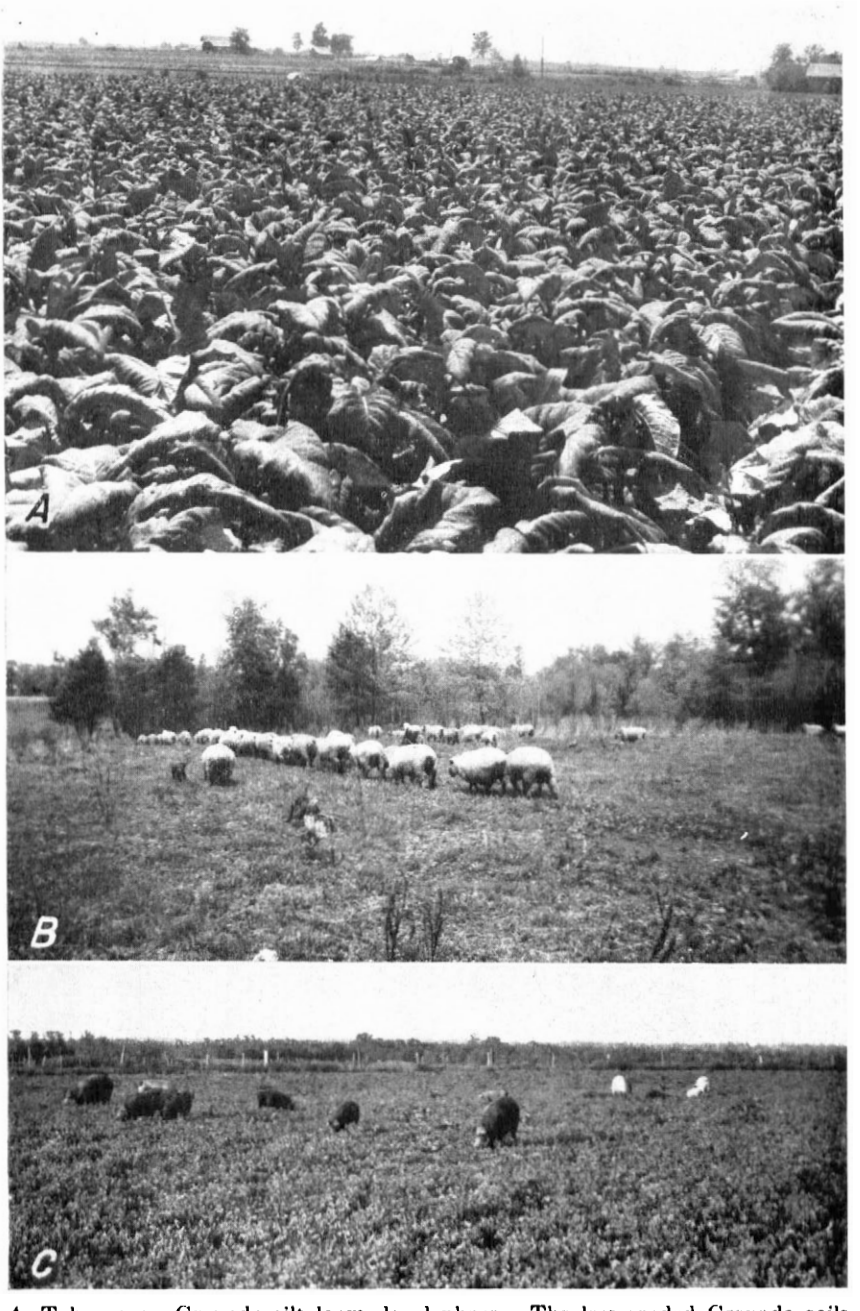


A, Permanent pasture of bermudagrass on eroded rolling and hilly phases of Ruston fine sandy loam. Beechy loamy sand, overwash phase, is at right.

B, A large gravel pit in an exposure of the Lafayette (Pliocene) formation. This coarse material underlies the Brandon and Lax soils.

C, A road cut through Brandon silt loam showing the thin, uniform blanket of loess and the underlying gravelly material.

A, Sorghum on Calloway silt loam. This somewhat poorly drained soil occupies gentle depressions in association with Grenada soils.
B, Freeland silt loam. The thick, mottled, reticulated siltpan is at a depth of about 22 inches.



A, Tobacco on Grenada silt loam, level phase. The less eroded Grenada soils are well suited to dark fire-cured tobacco.
B, Whiteclover and orchardgrass pasture on Hymon silt loam.
C, Hogs pasturing red clover on Memphis silt loam, level phase, after a 2½-ton hay crop and a 5-bushel seed crop

missing and the subsoil is exposed. The present surface soil consists of grayish-brown, pale-brown, or yellowish-brown friable silt loam. The subsoil is a yellowish-brown to brownish-yellow friable silty clay loam underlain at depths of 20 to 24 inches by a weak siltpan.

The surface soil is medium acid, and the lower layers are strongly acid. This soil is low in organic matter and has a moderate supply of plant nutrients. The topsoil and subsoil are readily penetrated by roots, air, and water, but the compact siltpan is only slightly permeable. Runoff is medium and internal drainage is moderately slow. The soil has a low or moderately low water-supplying capacity.

Use and management.—All of this soil is now used for crops and pasture. Corn and cotton are the principal cultivated crops and lespedeza the main hay crop. Some of the land is idle and covered with a variety of weeds, brush, and grass. It is occasionally grazed along with adjoining soils. Red, white, and crimson clovers, sweetpotatoes, and such small grains as wheat and oats are used in some rotations.

Because the slopes are stronger and erosion is more likely, this soil is less desirable for row crops than the eroded undulating phase of Freeland silt loam. It is otherwise suitable for most crops commonly grown in the county. It is low in lime and organic matter and has a limited supply of mineral plant nutrients. Its natural productivity is low to medium, and cropping practices and erosion have tended to decrease fertility.

The soil is moderately easy to cultivate and to keep in good tilth, and its slopes favor use of most types of farm machinery. The erodibility makes it moderately difficult to conserve. It generally holds enough moisture for general crops, but the siltpan interferes with deep-rooted crops.

Corn, tobacco, cotton, small grains, shallow-rooted legumes, grass hay, garden vegetables, and small fruits are all suited to the soil. Moderately long rotations that include close-growing crops are better on this soil than short intensive ones. Fertilizers are generally needed to get good yields, and good stands of legumes cannot be established without them. The soil is not well suited to alfalfa, but sericea lespedeza can be grown successfully with very little if any fertilization.

Freeland silty clay loam, severely eroded rolling phase (5 to 12 percent slopes) (Fy, 9).—This is a moderately well drained siltpan soil on the slopes of stream terraces. It occurs along many of the larger streams, mostly in the Freeland-Hatchie-Providence soil association. Closely related and associated soils are members of the Dexter, Hatchie, and Almo series.

Much or all of the original surface layer and some subsoil material have been removed by erosion. The present plow layer is mostly a mixture of the remains of the old surface layer and the upper subsoil. This mixture is a grayish-brown or pale-brown to yellowish-brown friable silt loam to silty clay loam. The subsoil, a yellowish-brown or brownish-yellow friable silty clay loam, is underlain by a weak siltpan.

Shallow gullies are common, and a few gullies cannot be crossed

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with heavy machinery. In many fields some of the original surface soil remains between the gullies.

This soil is very strongly acid, very low in organic matter and water-supplying capacity, and low in supply of available mineral plant nutrients. The subsoil material is readily permeable to air, roots, and water, but the siltpan is only slightly permeable. Runoff is moderately rapid and internal drainage is moderately slow.

This unit includes a few acres that have a fine sandy clay loam surface texture but are otherwise similar to this soil and require about the same use and management.

Use and management.—None of this soil is forested. It has been used for crops and pasture. Most of it is now idle or in low-grade permanent pasture. The cropped land is used mainly for corn, cotton, and lespedeza. A few acres are in the wildlife refuge.

This soil has been seriously damaged by erosion and now has very low productivity for crops or pasture. Because it is sloping and eroded, it is difficult to work and conserve. Moisture supplies during summer normally are not enough for crops. Supplies of humus, lime, and necessary plant nutrients are very low, and fertilizers are essential for satisfactory yields of all crops. Slopes are mild enough for most kinds of machinery, but the many gullies interfere with the use of heavier types. In its present eroded condition, the soil probably is best suited to pasture. However, it needs proper management, including the use of amendments, to produce good pasture. After a few years in a well-managed pasture and the use of such water-control measures as terraces, the soil can be used again for crops grown in rotation. At a very high level of management, the soil can be improved and maintained under a rotation consisting mainly of close-growing crops.

Greendale cherty silt loam (1 to 5 percent slopes) (Ga, 3).—This is a well-drained cherty colluvial soil. It is composed of mixed local cherty and silty colluvial and alluvial materials that washed chiefly from nearby upland soils derived from cherty limestone. The soil occurs along the base of upland slopes, on small colluvial fans, and on gentle slopes above overflow levels along intermittent drainageways. The soil occurs in small areas distributed in the northeastern part of the county in the Bodine-Mountview-Paden soil association. Some of these are now under Kentucky Reservoir. The native forest consists of mixed hardwoods, chiefly oaks, hickory, elm, and beech.

Profile description:

0 to 8 inches, grayish-brown or brown, porous, very friable cherty silt loam; moderate medium crumb structure; 6 to 14 inches thick.
8 to 24 inches, pale-brown, light yellowish-brown or yellowish-brown friable cherty silt loam; weak medium blocky structure; 10 to 20 inches thick.
24 inches +, yellowish-brown or brownish-yellow, porous, friable cherty silt loam extending to depths of 4 to 6 feet or more.

Some places have gray and strong-brown mottles in the lower subsoil, and layers of cherty silty clay loam occur at irregular depths. Many chert fragments on and in the soil interfere materially with cultivation. The fragments vary from less than 1 inch to 6 inches or more in diameter, and they may make up as much as half of the soil mass. The soil is medium to strongly acid throughout the profile. It has a moderate supply of organic matter. The soil material is

very porous and permeable to air, water, and roots. Runoff is moderately slow, and internal drainage is medium to rapid. The water-supplying capacity is moderately high.

Use and management.—About 25 percent of the soil is wooded, and the rest is idle. All of it is within wildlife refuge areas. The soil has moderately high productivity and is easy to work and very easy to conserve, but the chert somewhat hinders tillage. Its good drainage and aeration allow it to be cultivated early in spring and under a wide range of moisture conditions. It is well suited to the intensive production of a wide variety of crops. Corn, tobacco, small grains, lespedeza, alfalfa, soybeans, potatoes, and vegetables can be grown successfully. The soil responds satisfactorily to good management and its fertility can be increased.

Grenada silt loam, level phase (0 to 2 percent slopes) (Gd, 7).—This is a yellowish-brown, moderately well drained, hardpan soil on nearly level uplands. The soil was derived from a deep layer of silty loess underlain by slowly permeable Coastal Plain material. It occupies nearly level positions on broad ridges in association with Calloway and Henry soils and with other Grenada soils. Nearly all of the soil is in the Grenada-Calloway-Henry soil association. The native vegetation consists of oak-hickory forest.

Profile description:

0 to 8 inches, grayish-brown or brown very friable silt loam; weak medium crumb structure; 6 to 8 inches deep.
8 to 14 inches, yellowish-brown or strong-brown friable silt loam or heavy silt loam; weak medium blocky structure; 5 to 7 inches thick.
14 to 32 inches, yellowish-brown to brownish-yellow friable heavy silt loam or silty clay loam splotched light gray in lower part; moderate medium blocky structure; 14 to 20 inches thick.
32 to 40 inches, hardpan of compact, heavy, very slowly pervious silt loam to silty clay loam variegated in shades of yellow, strong brown, and gray; contains small pockets and lenses of gray clay in many places; 6 to 14 inches thick.
40 inches +, yellowish-brown or pale-brown moderately firm silt loam containing thin streaks of light-gray and strong-brown material; extends to depths of 5 to 7 feet.

The soil is strongly to very strongly acid throughout. Its content of organic matter, lime, and plant nutrients is low. The surface soil and upper subsoil are permeable to air, water, and roots, but the hardpan is very slowly permeable. Small dark-colored concretions are distributed through the soil, but are more numerous in the mottled layers. The soil is free of gritty material or gravel. Because the soil is nearly level, little rainfall runs off over the surface. Internal drainage is moderately slow. During rainy seasons, a fluctuating water table forms over the hardpan. Nearly all the water in the subsoil moves away laterally over the hardpan.

Use and management.—About 10 percent of this soil is in woodlots. About 70 percent of the cleared land is used for crops and pasture and the rest is idle or fallow. Corn and lespedeza cover the largest acreage of the farmed areas. Tobacco is an important cash crop, and much of the prosperity evident on Grenada soils has resulted from the intensive cultivation of tobacco (pl. 4, *A*). Small grains, sweetpotatoes, cotton, redtop, red clover, and whiteclover are minor crops.

This is one of the desirable agricultural soils of the county. It is

moderately productive, and is easy to work. The use of heavy farm equipment is favored by the mild slopes and the fact that the soil occurs in fairly large uniform bodies. Good tilth is easily maintained, and the soil is easy to conserve. On the other hand, the use suitability of the soil is somewhat restricted by impeded drainage, moderate water-supplying capacity, low content of lime, organic matter, and plant nutrients, and slowness in warming up during the spring.

Small grains and early-maturing crops may be grown successfully and yields can be increased by applying fertilizer. Corn may be damaged by drought during summer. Alfalfa and other deep-rooted legumes are not suited to this soil because the water stands above the hardpan. Sericea lespedeza is well adapted.

This is a suitable soil for vegetable crops and small fruits such as strawberries. It can be farmed intensively in short rotations, but fertilizer is required for satisfactory yields of most crops. The soil responds well to good management. Many farms consist mainly of this and other Grenada soils which can be managed under a similar system.

Grenada silt loam, undulating phase (2 to 5 percent slopes) (Ge, 7).—This is a moderately well drained yellowish-brown soil on the smoother uplands. It was derived from deep loess underlain by slowly permeable Coastal Plain material. The soil is associated with Memphis, Loring, Calloway, and Henry soils, chiefly in the Grenada-Calloway-Henry and Grenada-Dulac-Providence soil associations. The principal areas are near Puryear and northwest of Buchanan. The native vegetation consists of oak-hickory forest.

This soil differs from the Memphis soils by having a well-defined compact, mottled hardpan layer in the subsoil. It is better drained than Calloway or Henry soils.

The surface soil is a grayish-brown or brown very friable silt loam. The subsoil consists of yellowish-brown to brownish-yellow friable silty clay loam underlain by a hardpan at a depth of about 30 inches.

The reaction is medium to strongly acid; the stronger acidity is in the subsoil. The soil is low in organic matter and low to medium in plant nutrients and water-supplying capacity. The hardpan is only slightly permeable, but the layers above are permeable to roots, air, and moisture. Runoff and internal drainage are medium. Water accumulates above the hardpan during rainy periods, and most of it drains away laterally. Soft and semihard concretions are present throughout the soil, especially in the subsoil and hardpan.

Use and management.—Nearly all of this soil is in woodlots consisting mostly of white oak, red oak, post oak, and hickory. Most of the better trees have been cut, and the present stand includes many small- and medium-sized trees and culls.

This soil is suitable for many crops, but the hardpan and impeded drainage restrict its suitability for alfalfa and other deep-rooted crops. It is moderately productive and responsive to good management. The supply of lime and organic matter is low and that of plant nutrients medium to low. The soil has a moderate water-supplying capacity. It is easy to work and moderately easy to conserve and maintain in good tilth. The relief is suitable for use of heavy farm machinery

The soil is well suited to high-quality dark tobacco, cotton, lespedeza, and sericea lespedeza and is moderately well suited to small grains, corn, and red clover. With proper management, good pastures can be established and maintained. Fertilization is necessary for good yields of many crops. Some crops like red clover cannot be produced without fertilizer.

Grenada silt loam, eroded undulating phase (2 to 5 percent slopes) (Gf, 7).—This is a moderately well drained hardpan soil on the broader upland flats. It was derived from silty loessial material underlain by slowly permeable Coastal Plain material at depths of 3½ to 6 feet. It is the predominant soil on some of the more extensive, less dissected uplands in the Grenada-Calloway-Henry soil association, but small areas are widely distributed in other parts of the county. It is closely associated with Memphis, Calloway, Loring, and Henry soils.

Some of the original surface layer has been lost through erosion. The plow layer is mostly in the old surface layer, but some subsoil material has been mixed in. Small, scattered, severely eroded patches are conspicuous because the subsoil has been exposed. The present surface layer consists of grayish-brown to yellowish-brown very friable to friable silt loam. The texture may be a silty clay loam on the more severely eroded spots. The subsoil is yellowish-brown to brownish-yellow friable silty clay loam underlain by a hardpan at a depth of about 30 inches.

The upper layer of the soil is medium acid in most places, but the lower layers are generally strongly to very strongly acid. The content of organic matter is low, supplies of plant nutrients are moderate to low, and the water-supplying capacity is medium. Air, water, and roots readily penetrate the upper soil layers, but the hardpan is very slowly permeable. Runoff is medium, but internal drainage is moderately slow because it is restricted by the hardpan. Most of the water that accumulates over the hardpan drains away laterally. This soil has no gravel, but some small rounded soft and semihard concretions are distributed through it, especially in the mottled layer.

Use and management.—All of this soil has been cleared, and most of it is used for corn, tobacco, lespedeza, hay, and forage crops. Other crops grown are small grains, cotton, sweetpotatoes, white-clover, redtop, red clover, and soybeans. Some fields are idle or used for rough pasture.

This soil is important agriculturally because of its comparatively large areas, mild relief, moderate productivity, and its suitability for growing high-quality, dark, fire-cured tobacco. It and the other phases of Grenada silt loam support a fairly prosperous agriculture. Tobacco has been the chief cash crop in the soil association in which this soil occurs.

The soil is well suited for growing a large variety of field crops, hay, and pasture. It is easy to work and moderately easy to conserve and to keep in good tilth. The relief favors the use of heavy machinery. Supplies of lime and organic matter are low, and supplies of plant nutrients are low to medium. However, the soil responds to good management, and higher average yields are easy to maintain.

The slow drying out and warming up in the spring may delay

plowing of this soil. Although it is not so well suited to corn as some other crops, fairly good yields of corn are obtained with proper management. Tobacco, cotton, sweetpotatoes, and lespedeza are the most suitable common crops. Red clover grows fairly well when the proper amendments are used. Alfalfa does not do well on this soil, but in many fields sericea lespedeza does very well, even without fertilization. Short, intensive rotations can be used successfully on this soil and good yields can be maintained if enough fertilizer is applied. Good-quality pasture mixtures that include white or Ladino clover and orchardgrass or fescue can be established and maintained by practicing good management.

Guin gravelly loam, steep phase (25 + percent slopes) (Gh, 15).—This is an excessively drained very gravelly soil on steep upland slopes. The parent material consists almost entirely of gravel, mainly chert, but some quartz and sandstone materials are included. The soil occurs in the northeastern part of the county, where it is associated with Brandon, Lax, and Ruston soils. All of it is in the Brandon-Guin-Lax soil association. The native vegetation is oak and hickory forest.

Profile description:

0 to 1 inch, brownish-gray or gray gravelly loam.
1 to 10 inches, light brownish-gray, pale-brown, or grayish-brown very friable gravelly silt loam or loam; 6 to 12 inches thick.
10 to 25 inches, yellowish-brown or brownish-yellow loose very friable gravelly silt loam, light silty clay loam, or light clay loam to loose gravelly loam; 10 to 20 inches thick.
25 inches +, stratified beds of waterworn gravel mixed with light-brown or yellowish gritty silt or clay loam material; 4 to 30 feet or more in thickness.

The soil is strongly to very strongly acid and low in organic matter and plant nutrients. All layers are well aerated, very porous to water, and permeable to roots. Surface runoff and internal drainage are both very rapid. The soil has a very low water-supplying capacity. A large part of the soil mass consists of gravel.

Some of the gravel layers in the substratum are so cemented that they restrict internal drainage. Numerous small patches of gritty silt loam material and a few acres of Brandon silt loam are included in this unit.

Use and management.—All of this soil is in woods that have been cut over several times. Nearly all of the good timber has been removed. The present stand is young and contains many cull trees. Timber grows slowly on this soil.

The soil has very low natural productivity and is very difficult to work and conserve. Its steep slopes, very low water-supplying capacity, low fertility, and high content of gravel make it very poorly suited to crops and pasture. The soil is apparently best used for forest.

Guin-Brandon soils, rolling phases (5 to 12 percent slopes) (Gk, 14).—This complex consists of an intricate association of Guin and Brandon soils on ridgetops or upper parts of slopes. The unit is like Guin-Brandon soils, hilly phases, but has milder slopes. The Guin soil was derived from beds of chert, quartz, and sandstone gravel, and the Brandon from a shallow loess layer deposited on gravel beds. This combination of soils occurs in a few scattered areas in the north-

eastern part of the county. It is associated with Lax and Lexington soils and with other Guin and Brandon soils. The native forest cover is mixed hardwoods.

These soils vary from medium to very strongly acid. They are low in organic matter and plant nutrients. Both soils are readily permeable to air, roots, and water. Runoff is medium to slow, and internal drainage is medium to rapid. The water-supplying capacity varies from low to medium. The soils hold little moisture during dry periods because they have a porous gravelly substratum. The Brandon soil is free of gravel, but gravel constitutes a considerable part of the Guin soil layers. The proportionate amount of Guin and Brandon soils varies in each area. Some areas are composed entirely of Guin soils.

Use and management.—These soils are wooded. The cover consists of post oak, blackjack oak, chestnut oak, red oak, and some hickory. The woods have been cut over several times, and nearly all the good timber is gone. In most places the present stand is of very poor quality. The timber grows slowly.

The relief and other properties of these soils favor crop production. They are low to medium in productivity but respond to good management. They are moderately easy to work but moderately difficult to conserve. Most areas, however, are isolated as small bodies within large areas of steep forested soils. Because of their location they are of little practical value for crops or pasture. They are suited to most of the crops common to the county and could be used for crops and pasture if they were associated with other crop-adapted soils. On most farms, these soils are best allowed to remain in forest.

Guin-Brandon soils, eroded rolling phases (5 to 12 percent slopes) (GI, 14).—This unit consists of small areas of intricately associated Guin and Brandin soils on ridgetops or slopes of ridges. The Guin soils have developed from beds of chert, quartz, and sandstone gravel, and the Brandon from shallow deposits of loess on gravel. Small areas of this complex are widely scattered over the northeastern part of the county in association with Lax and Lexington soils and with other Guin and Brandon soils.

Some or all of the original surface layers have been washed away by erosion. Mixing of surface and subsoil material has produced variations in texture of the present surface layer. Shallow gullies have been cut in most areas.

These soils are strongly to very strongly acid and low or very low in organic matter and plant nutrients. They have good aeration and circulation of moisture and are readily permeable to roots. Surface runoff is moderately slow. Internal drainage is medium in the Brandon soil and rapid in the Guin. The Guin is very gravelly throughout the profile, but the Brandon is almost free of gravel.

Use and management.—All of this complex is cleared and has been used for such crops as corn, cotton, and lespedeza. Now these areas are idle or are used infrequently for grazing. The vegetation consists principally of poor stands of broomsedge mixed with weeds, briers, brush, and other native plants.

These soils have few suitable uses and require exacting management. Erosion has reduced their agricultural value considerably. The

relief and other properties favor moderately easy cultivation and conservation, but the productivity is low. Good tilth is difficult to maintain on the more severely eroded spots. Considerable effort will be required to improve the soils enough to get profitable yields of crops or pasture.

Moisture supplies are low or very low in the Guin soil, and only fair in the Brandon. Most areas of this complex have little practical value for crops or pasture because they are too small, are inconveniently located, or are associated with large bodies of steep forested soils. On most farms forestry is the best use.

Guin-Brandon soils, hilly phases (12 to 25 percent slopes) (Gm, 14).—This complex consists of hilly upland areas where Guin and Brandon soils are so intricately associated that it is not practical to separate them on the soil map. The Guin soil was derived from unconsolidated beds of chert, quartz, and sandstone gravel, and the Brandon soil from a thin layer of wind-deposited silt on top of the gravel. This unit occurs in the northeastern part of the county; it is associated with Lax, Ruston, Lexington, and Loring soils, and with other Brandon soils, chiefly in the Brandon-Guin-Lax soil association. The soils of this complex have developed under an oak-hickory forest.

Profile description of Guin gravelly loam:

0 to 10 inches, light brownish-gray, pale-brown, or grayish-brown gravelly silt loam or loam; 6 to 14 inches thick.
10 to 25 inches, yellowish-brown or brownish-yellow loose very friable gravelly silt loam, light silty clay loam, or light clay loam to loose gravelly loam; 10 to 20 inches thick.
25 inches +, stratified beds of gravel intermixed with brownish silt and brownish-red sandy loam material; 2 to 30 feet or more thick.

Profile description of Brandon silt loam:

0 to 1 inch, dark-gray very friable mellow silt loam.
1 to 6 inches, grayish-brown or brown very friable mellow silt loam; 5 to 8 inches thick.
6 to 18 inches, strong-brown to yellowish-brown friable silty clay loam; 10 to 15 inches thick.
18 to 24 inches, yellowish-brown or strong-brown friable silt loam or light silty clay loam; 4 to 6 inches thick.
24 inches +, stratified beds of gravel; 4 to 25 feet or more thick.

The soils of this complex are strongly to very strongly acid and low in content of organic matter. They are readily permeable to air, water, and roots. The water-supplying capacity varies from low to medium. Surface runoff is rapid and internal drainage is rapid to medium. The Guin soil contains a large amount of gravel, but the Brandon soil is free of gravel. The pattern of soils and the characteristics of each soil vary throughout this complex.

Use and management.—All of this unit is in woods, consisting mostly of oaks and hickory but including some yellow-poplar and maple. Most of the woods have been cut over and have been injured by fires or by grazing cattle. The present stand of young and cull trees grows slowly.

The soils of this complex are poorly suited to crops and not very good for pasture because of the strong slopes, low fertility, droughtiness, and strong likelihood of erosion. They are difficult to work and moderately difficult to conserve. The slopes are too steep to cultivate with heavy farm machinery. Some areas cannot be economically

used for pasture because of their inconvenient location or association with steep forested soils. The most practical use of this soil complex appears to be forestry.

Guin-Brandon soils, eroded hilly phases (12 to 25 percent slopes) (Gn, 14).—This complex consists of Guin and Brandon soils closely associated in an irregular intricate pattern. This unit was like Guin-Brandon soils, hilly phases, but was cleared of timber, and as a result, lost 25 to 75 percent of the original surface layers through erosion. Shallow gullies have been cut in most areas. Some mixing of surface and subsoil material has produced a heavier surface texture and more variable color in the present surface layer. Areas of these soils occur on ridge slopes in the northeastern part of the county in association with Lexington, Loring, and Ruston soils, and other phases of Guin and Brandon soils. This separation is found only in the Brandon-Guin-Lax soil association.

These soils are strongly to very strongly acid and low in organic matter and plant nutrients. Their materials are readily permeable to air, roots, and water. They vary from low to medium in water-supplying capacity. The Guin soil has a high content of gravel, but the Brandon soil is free of gravel except for a little that has washed onto the surface from the adjoining Guin soil.

Use and management.—All areas were once cleared for crops. Most of them are now idle, but some are used occasionally for unimproved pasture.

The Guin soil, because of low fertility, low water-supplying capacity, high content of gravel, and steepness of slope, is not considered suitable for crops or pasture. It is best suited to forest. The Brandon soil has higher natural fertility, but its hilly slopes make it difficult to work and to conserve and highly likely to erode. Areas dominated by Guin soils are best adapted to timber, but areas entirely or predominantly of Brandon soil may be used for pasture. Many areas are so located or associated with soils adapted only to forest that it would appear best to establish trees on them.

Guin-Brandon soils, severely eroded hilly phases (12 to 25 percent slopes) (Go, 15).—This complex comprises hilly, rough, and severely eroded areas of an intricate association of Guin and Brandon soils. They are like Guin-Brandon soils, hilly phases, but most or all of the original surface layers have been carried away by erosion. The present plow layer is a mixture of the remnants of the original surface layers and the upper part of the subsoil. The amount of soil varies, and in places the plow layer may be entirely within the original surface material. This irregular erosion causes the texture of the present surface to vary from silt loam to silty clay loam. The subsoil and underlying gravel are exposed in places. Shallow, narrow gullies have penetrated the subsoil in most areas.

This complex occurs in the northeastern part of the county in association with Lax, Lexington, Loring, and Ruston soils, and with other Guin and Brandon soils. It occurs only in the Brandon-Guin-Lax soil association. The principal types of this association are Guin gravelly silt loam and Brandon silty clay loam.

These soils are strongly to very strongly acid and are very low in organic matter and plant nutrients. Moisture circulates through the

material fairly rapidly, but erosion has so reduced the absorption of the upper layers that loss of water by surface runoff is very rapid. Internal drainage is rapid to very rapid. The soils are well aerated, and roots may penetrate all layers.

Gravel forms a considerable part of the Guin soil. A little gravel has washed onto the surface of the Brandon soil from Guin soil, but the subsoil is free of gravel.

Use and management.—All of this complex has been cleared and used for general field crops. Most of it is now idle, but a few areas are used as rough pasture. The pasture is mostly low-quality native plants, weeds, and brush. Some patches consisting mostly of subsoil material are bare of vegetation or support only a scattered, thin, poor growth of plants.

Severe erosion has lowered the capability of these soils for producing crops or pasture, and now they have a very low productivity. They are very difficult to work and to reduce to a favorable tilth. They are difficult to conserve, and gullies interfere with the use of heavy farm implements. Considerable effort and expensive soil preparation are necessary to establish pastures successfully. The low fertility, steep slopes, droughtiness, association with areas of poor soils, and difficulties of management make this complex most suitable for forest.

Gullied land, Cuthbert and Dulac soil materials (5 to 30 percent slopes) (Gs, 15).—This unit consists of a network of gullies that have either completely destroyed or severely damaged most of the former soil. Originally some of this land consisted of Cuthbert fine sandy loam and some was Dulac soil or other siltpan soils derived from shallow loess. All of these soils were underlain by unconsolidated Coastal Plain clays or sandy clays. Much of the material exposed in these gullied areas consists of these clays or sandy clay sediments of varicolored red, yellow, and gray. In some places narrow strips of moderately or severely eroded soils remain between the gullies, but in others all the original soils were carried away when erosion cut into the geological substratum. This land type occurs mostly as small areas in association with Dulac and Cuthbert soils.

All of this land is now idle or abandoned. A few small areas have been reforested with pine, but others have only a sparse covering of native wild grasses, weeds, vines, scrubby trees, and other plants. Some of the gullies have almost no vegetation. Runoff is very rapid, and progressive cutting, gullying, and enlargement of these areas continues. In their existing condition, these areas have little or no value for crops or pasture, but they might be used for growing trees. Shortleaf and loblolly pine offer the best possibilities for reforesting such areas. Locust does poorly even if fertilized. These areas are a continual liability where nearby bottom and colluvial lands are being covered with infertile debris and rubble carried from these gullies. Careful management of these areas is essential to prevent additional cutting into or encroachment upon adjoining lands. It takes considerable time and expense to prepare these areas for pasture or trees, but it is advisable for the landowner to control further destructive gullying.

Gullied land, Memphis soil material (5 to 12 percent slopes) (Gu, 15).—This is a separation of Memphis and some Lexington soils that have been severely damaged and gullied by erosion and from which large quantities of materials have been carried away. A network of gullies 2 to 5 feet or more in depth covers half or more of this land type. Runoff of surface water is rapid and unchecked in most gullies. Small- and medium-sized bodies of this land type are widely distributed over the county in association with Memphis, Loring, and Lexington soils.

Most of these soils were formerly fertile and productive, but under cultivation they were permitted to erode and gully to varying depths—in some places into the underlying unconsolidated geologic material. Some of the small, narrow strips of soil or isolated patches between the gullies show parts of the different layers that comprised the soil before gullying.

This gullied land type has no practical value for crops, and considerable time and effort would be needed to reclaim it for pasture. The natural vegetation is very scant and usually has a low feed value. A few areas have been entirely or partially covered with trees by natural reseeding, and a few acres have been planted to pine and locust trees. Such areas are also well suited to yellow-poplar. Reclaiming this land is an expensive, slow process and requires terraces, check dams, diversion ditches, and growing of a vegetative cover. Forestry is probably the most satisfactory practical use for this land type. However, it should be reclaimed for pasture if the area is small and is associated with pasture-adapted soils.

Gullied land, Ruston soil material (5 to 30 percent slopes) (Gv, 15).—This land type has been reduced to a network of gullies by the destruction or severe damage of the former soils by erosion (pl. 5, *A*). Ruston soils predominated on these areas. The gullies have cut to different depths into the soil layers, and some have penetrated into the underlying Coastal Plain materials. Surface runoff is very rapid and most of it flows unchecked in gully channels. Absorbed water rapidly drains away through the sandy material. This land type occurs chiefly in bodies of a few acres and is widely distributed over the county in association with Ruston, Memphis, and Lexington soils.

The soil material now exposed over this land type is mostly red, brown, or light-colored sand or sandy clay loam. Remains of the original soils, in which parts of the different layers are missing, form an irregular pattern between the gullies. All the material in these gullied areas has a very limited supply of organic matter, lime, and plant nutrients and has very low productivity. The land is very difficult to work because of abrupt irregularities in relief and in depth of the gullies. The nearby uplands are being encroached upon by the headward cutting of gullies, and nearby colluvial lands and bottom lands are damaged by overwash of infertile sandy materials from these areas.

Much of this land type is bare of any vegetation. A sparse growth of weeds, vines, and other native plants is grown in places, but this does not always check erosion. Trees have spread by natural reproduction on some of the older abandoned areas. Individual farmers, agricultural groups, and other agencies have reforested a small

acreage with pines or locust. Yellow-poplar does well on the seepage slopes and in the gully fill material. Locust generally requires phosphorus fertilizer for successful growth.

This gullied land is not suited to crops or pasture in its present condition and can best be used for forestry.

Gully wash (0 to 3 percent slopes) (Gw, 15).—This consists of mixed local alluvial or colluvial soil material washed from gullied land types. It has accumulated at the mouth or along the base of the gullies as outwash fans or as narrow belts of colluvium deposited over adjacent terraces or stream bottoms (pl. 5, *B*). Some areas are so recent in origin as to be entirely devoid of vegetation. Older ones have become covered with a spotty growth of small willow, birch, alder, and sycamore trees, and native wild grasses, weeds, briers, and other plants. All areas of Gully wash are small, or less than an acre to several acres in size. Areas are widely distributed and are associated chiefly with Gullied land, Ruston soil material, or Cuthbert and Dulac soil materials, and with Hymon and Beechy soils.

Gully wash consists of such young or recent soil materials that it has not developed profile layers. Most of it is sand but this may be mixed or interbedded with silty sediments. A few small spots contain some gravel. Gully wash varies in texture, color, consistence, drainage, and other characteristics from one place to another. The texture is generally sandy, particularly if the material originally came from areas of Coastal Plain formations. In most places the first sediments were silty, for they were derived from upland loessial soils. These eventually became covered with sandy material to an irregular depth. The sediments are shades of yellow, brown, and gray, and the color pattern fluctuates with the drainage. Drainage is seldom uniform over the same area. An area varies from moderately well drained to poorly drained. Internal drainage is influenced by the texture and thickness of the lower layers and by the fluctuating water table.

All areas of Gully wash are now idle, and no attempts are being made to farm them. The wash material is strongly acid, is very low in plant nutrients, contains very little organic matter, and has very low natural productivity. It is likely to receive new accumulations of unproductive debris from gullied land. When cleared, this soil material is easy to work and conserve against erosion. In its present state, however, it is very poorly suited to cultivated crops or pasture and is best used for trees.

Hatchie silt loam, level phase (0 to 2 percent slopes) (Hc, 10).—This is an imperfectly drained light-colored siltpan soil on terraces. The parent material consists of old mixed alluvium that washed from uplands underlain by loess and Coastal Plain materials or from soils that have a thin mantle of loess overlying mixed alluvium. The soil occurs on the broader terraces of the major streams. The largest acreage is in the central and northeastern parts of the county. The soil is associated with and related to the Dexter, Freeland, and Almo soils. Its drainage is poorer than that of Freeland soils and better than that of Almo soil. This soil, the most extensive of the Hatchie series, has formed under a forest of mixed hardwoods.

Profile description:

0 to 1 inch, dark-gray or dark brownish-gray silt loam stained with organic matter.
1 to 10 inches, light brownish-gray or pale-brown mellow very friable silt loam; weak, thin platy structure in forested areas; weak medium crumb structure in cultivated fields; 8 to 12 inches thick.
10 to 22 inches, light yellowish-brown or pale-yellow friable heavy silt loam with numerous light-gray and strong-brown mottles; lower part is silty clay loam in many places; very weak fine blocky structure; 10 to 14 inches thick.
22 to 28 inches, siltpan of compact silt loam or silty clay loam mottled with shades of gray, yellow, and brown; 4 to 10 inches thick.
28 inches +, firm gray silt loam or silty clay loam mottled with light gray, strong brown, and brownish yellow; has interbedded silty and sandy material in places; 3 to 10 feet or more thick.

The soil is strongly to very strongly acid, very low in organic matter, and low to very low in plant nutrients. The upper layers of the soil are permeable to roots, water, and air, but the siltpan is only very slightly permeable. Surface runoff is slow or very slow, and internal drainage is very slow. Water accumulates over the siltpan, and at times the soil is waterlogged to the surface. Small rounded concretions are distributed throughout the soil.

Use and management.—About 10 percent of this soil is in woods. The stand consists mainly of oaks, sweetgum, elm, beech, ash, and hickory.

The rest of the soil is cleared and used for general farm crops and pasture. A large acreage is fallow or idle. Use of the soil is influenced by seasons and drainage. Corn and lespedeza are the principal crops. Small grains, soybeans, redtop, sorghum, and miscellaneous crops are grown on a small scale.

Hatchie silt loam, level phase, has limited suitability for use because it is imperfectly drained, is low in fertility, and has a limited rooting zone. It is difficult to drain because it has a nearly impervious siltpan and lies on broad nearly level terraces. The water table near the surface during rainy periods restricts aeration and root growth. The soil is very slow in draining and warming up in spring, and seedbed preparation is frequently delayed. The water-supplying capacity is moderately low, and shallow-rooted crops may be injured by droughts in the summer and fall. At the proper moisture content, the soil is easy to work and is not likely to erode. It is low in humus, lime, nitrogen, potassium, and phosphorus.

Average yields are low, and sometimes there are complete crop failures. The soil is best suited to crops that can stand excessive moisture. Short-season summer annuals—crops such as soybeans, sorghum, corn, and lespedeza—are best suited. With proper use of amendments, good pastures of whiteclover and fescue can be established and maintained. The use suitability could be broadened by good artificial drainage, but yields would still be low unless the crops were well fertilized.

Hatchie silt loam, undulating phase (2 to 5 percent slopes) (Hd, 10).—This is an imperfectly drained light-colored siltpan soil on stream terraces that lie above ordinary flood levels. It has developed from old mixed alluvium washed from upland areas of loess underlain by Coastal Plain soil materials or from materials derived from a shallow mantle of loess over mixed alluvium. It is not so well drained

as the Dexter and Freeland soils but is better drained than the Almo soil. It is in the Freeland-Hatchie-Providence association on some of the broader terraces. The largest acreage, however, is in the northern half of the county. The forest cover consists of mixed hardwoods.

This soil is like Hatchie silt loam, level phase, but is more strongly undulating. It has a light brownish-gray or pale-brown very friable silt loam surface soil; a light yellowish-brown or pale-yellow silt loam or silty clay loam subsoil; and a compact siltpan at about 20 inches.

This soil is strongly to very strongly acid, very low in organic matter, and low to very low in plant nutrients. The siltpan is very slowly pervious, but the layers above are permeable to roots, air, and water. The soil material is free of gravel but contains some soft and semihard concretions, mostly in the subsoil. Runoff of surface water is slow, and internal drainage is very slow. Downward percolation is greatly restricted by the nearly impervious siltpan. Water that accumulates over the siltpan drains away horizontally. The water-supplying capacity is moderately low but is usually adequate except during extended droughts.

Use and management.—About 75 percent of this soil is timbered. Oaks predominate in the stand, but the forest includes sweetgum, blackgum, hickory, beech, oak, and some tulip-poplar. Woodlots have been cut over a number of times, and nearly all the good timber has been removed. The present stand is a moderate growth of small- and medium-sized trees.

About one-fourth of this unit has been cleared for farming. Most of the open land is in pasture, and only small scattered areas are row cropped. Corn and lespedeza hay are the chief crops grown. Yields vary extremely and frequently are disappointingly low. Some fields are idle and are growing up to weeds, brush, and briers.

When cleared, the undulating phase of Hatchie silt loam has limited suitability for many crops because of its poor drainage, low fertility, and siltpan. Nevertheless, if adequately drained, it is easily worked. The slopes are mild enough for use of most kinds of heavy equipment and erosion is not a serious problem. The soil has a very low content of humus and lime and is deficient in nitrogen, phosphorus, and potassium. It is fairly well suited to soybeans and sorghum. These have a short growing season and can be planted late in spring. Lespedeza shows moderate response on areas that have fair surface drainage. The soil is suited for pasture, but yields are low without fertilization. In favorable seasons corn may produce fair yields. It does not seem necessary to clear woodlots and put additional acres of this soil into cultivation.

Hatchie silt loam, eroded undulating phase (2 to 5 percent slopes) (He, 10).—This imperfectly drained, moderately eroded, siltpan soil has developed on stream terraces. It formed from old mixed alluvium consisting chiefly of loess and Coastal Plain materials. It is widely distributed along the larger streams throughout the county, where it is associated with the related better drained Dexter and Freeland soils and the more poorly drained Almo soil. Most of the soil is in the Freeland-Hatchie-Providence association.

Erosion has removed a varying amount of material from the surface. On much of the area, however, the plow layer is within the original surface layer. In a few patches, the mixing of materials from the surface layers and the upper subsoil has changed the color and texture of the plow layer. The present surface layer is a light brownish-gray or pale-brown to light yellowish-brown very friable silt loam. The subsoil, which consists of light yellowish-brown or pale-yellow friable silt loam or silty clay loam, is underlain at a depth of about 20 inches by a well-developed siltpan.

The soil is strongly to very strongly acid. It is very low in humus and in mineral plant nutrients. The upper layers are permeable to roots, air, and water, but the siltpan is very slightly permeable. A few soft and semihard concretions are distributed throughout the soil mass. Surface runoff is moderately slow, and internal drainage is very slow. Water accumulates over the nearly impervious siltpan and keeps the soil above it saturated for long periods. At other times during summer and fall, crops may be injured by drought.

Included with this soil are a few acres, on several farms, that are characterized by fine sandy loam or loam texture in the plow layer. The lighter textured soil is similar to the silt loam in productivity and management requirements.

Use and management.—All of this soil has been cleared and used for crops and pasture. Row crops are now grown only on small areas. Most of the soil remains idle or fallow for several years at a time. Pastures consist of poor-quality native plants. Yields of crops are low, and sometimes crops are a complete failure.

Inadequate drainage and low natural fertility limit the suitability of this soil for many crops. When moisture content is right, the soil is easy to work and to keep in good tilth. Tillage is often delayed, however, by extremes in moisture. The soil is low in lime and humus and deficient in nitrogen, potassium, and phosphorus. Slopes are suitable for use of most farm implements, but heavier machines cannot be used effectively during wet seasons because the soil will not support their weight. The soil material is susceptible to erosion, which can be readily controlled by ordinary conservation practices. The soil is too wet for many crops, and it is difficult to improve drainage. The soil is more suitable for hay and pasture than for most row crops. Lespedeza, redtop, alsike clover, fescue, soybeans, and sorghum are among the better crops for this soil. Drainage is one of the chief problems.

Hatchie fine sandy loam, level phase (0 to 2 percent slopes) (Ha, 10).—This is an imperfectly drained hardpan soil on stream terraces. It has formed from old alluvial deposits of silty and sandy materials that washed from uplands underlain by loess and Coastal Plain materials. The forest of mixed hardwoods and the high and fluctuating water table contributed to its formation. A few small areas of this soil are scattered in the eastern half of the county, where they are associated with Dexter, Freeland, and Almo soils and with other Hatchie soils. This soil is sandier than the level phase of Hatchie silt loam and occupies lower terraces.

Profile description:

0 to 1 inch, dark-gray friable fine sandy loam or loam stained with decayed organic matter.
1 to 8 inches, gray or light brownish-gray very friable fine sandy loam; 6 to 8 inches thick.
8 to 12 inches, light brownish-gray or pale-brown fine sandy loam or loam; has some light-gray and strong-brown mottles; 3 to 5 inches thick.
12 to 22 inches, light yellowish-brown or pale-yellow friable loam or light clay loam streaked and splotched with light gray and strong brown; 8 to 12 inches thick.
22 to 30 inches, hardpan of compact heavy silt loam, loam, or light sandy clay loam; has mottles of gray, yellow, and brown; 6 to 10 inches thick.
30 inches +, moderately firm interbedded silty and sandy material; varicolored gray, brownish yellow, and strong brown; 3 to 10 feet or more thick.

This soil is strongly to very strongly acid and very low in organic matter. The upper layers allow penetration of roots and circulation of air and water, but the hardpan layer is only very slightly permeable. Runoff is slow. Much of the rainfall soaks into the ground. Internal drainage is very slow, and most of the accumulated water seeps away gradually over the nearly impervious siltpan. The soil may become waterlogged near the surface during long rainy spells. During droughts, however, crops may be injured by lack of moisture. A few dark, rounded concretions are distributed through the upper layers of the soil, and they are quite numerous in the siltpan and substratum.

This soil includes small spots of Hatchie very fine sandy loam and silt loam. It is, furthermore, not a uniformly developed soil; slight differences in color, texture, and depth of layers occur from one place to another. These differences influence use and management very little.

Use and management.—This soil supports a forest consisting of water-tolerant oaks and some hickory, sweetgum, and elm. Most of the better timber and mature trees have been cut; the present cover is a fair stand of young trees. Very few areas of this soil are now being cleared for farming.

When cleared, this soil is poorly suited to many crops because it does not have adequate drainage. It is very low in humus and lime. The moderately low fertility cannot support intensive cropping. At the right moisture content, the soil is easy to cultivate and keep in good tilth. The nearly level relief permits little loss of soil through erosion. Moisture conditions are poor for many plants and are difficult to improve.

The soil is best suited to hay, pasture, and crops that have a short summer growing season. Corn, wheat, and tobacco can be grown, but yields are low and the crops may be severely damaged by excess moisture. Soybeans, sorghum, redtop, and lespedeza are better adapted crops. Good pastures of fescue and whiteclover can be established and maintained by applying proper amounts of fertilizer and using other good management. Landowners are not now clearing the wooded areas of this soil.

Hatchie fine sandy loam, undulating phase (2 to 5 percent slopes) (Hb, 10).—This is a siltpan soil on terrace lands that have imperfect drainage. The parent material is old mixed alluvium, chiefly loess and Coastal Plain materials. Most of the material is sandy. The

soil is a member of Dexter, Freeland, Hatchie, and Almo group of soils. It is better drained than the Almo soil, but not so well drained as the Freeland soils. The native forest was mostly oaks and hickory.

The texture, color, consistence, and siltpan of this soil are like those of Hatchie fine sandy loam, level phase. The chief differences are in relief, local drainage, and erosion. The saturation of the upper soil layers varies with the level of the water table, which is influenced by minor differences in elevation.

The soil is strongly to very strongly acid. It has a very low content of organic matter. The siltpan is only slightly permeable to roots, water, and air, but the layers above it allow them to penetrate. The depth of roots and of air circulation depends on the height of the water table. Surface runoff is slow, and internal drainage is very slow. The water-supplying capacity is moderately low.

Use and management.—This soil is nearly all in woods. Woodlots consist mostly of oaks with some hickory, sweetgum, elm, and tulip-poplar. They have been cut over several times, and nearly all the better timber has been removed. The present growth is mostly a moderate stand of small- and medium-sized trees.

Imperfect drainage is the chief restriction on the use of this soil. The upper layers are wet for much of the year, and this greatly limits suitability for crops. The soil is difficult to drain because it is located on broad nearly level terraces, lacks natural outlets, and has a hardpan. Supplies of humus and lime are very low, and the soil is deficient in potassium, nitrogen, and phosphorus. Drainage is usually better for plants during summer. Crops that can stand wet soil or those that can be started late in spring and have a short growing season are generally best adapted to this soil. Soybeans, sorghum, corn, lespedeza, whiteclover, redtop, and fescue can be grown successfully. Artificial drainage would broaden suitability for agriculture, but yields of most crops would still be low unless they were heavily fertilized.

Henry silt loam (0 to 2 percent slopes) (Hh, 12).—This is a very poorly drained, light-colored, hardpan soil on broad uplands. Locally, it is termed "white" or "crawfish land." The soil was formed under very wet conditions in parent material composed of deep loess. Typically, it occupies nearly level or slightly depressed positions. It is the most poorly drained of the Memphis, Grenada, Calloway, and Henry group of soils and is associated with them mostly in the north-central part of the county in the Grenada-Calloway-Henry soil association. Most of the areas are not large; many contain less than 10 acres. The natural forest is chiefly water-tolerant oaks and hickory, and a few elm, ash, sweetgum, and blackgum.

Profile description:

0 to 2 inches, gray to light brownish-gray friable silt loam.
2 to 18 inches, light-gray smooth very friable silt loam or silt specked very slightly by a few brownish-yellow and strong-brown mottles; lower few inches, in some places, is a silty clay loam; weak, thin platy structure; 14 to 20 inches thick.
18 to 32 inches, hardpan of compact light-gray silty clay or heavy silty clay loam slightly splotched with strong brown in places; 10 to 18 inches thick.

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32 to 38 inches, moderately firm silty clay loam or heavy silt loam in varicolored shades of gray, yellow, and brown.
38 inches +, brownish-gray or bluish-gray moderately firm silt loam or heavy silt loam moderately splotched with light gray and strong brown; extends to depths of 4½ to 6 feet, where it is underlain by sandy clay Coastal Plain material.

This soil is strongly to very strongly acid. It is very low in organic matter and very low in fertility. The claypan is very slowly permeable, but the layers above it are moderately permeable to roots, air, and water. Most of the root system of plants and trees is restricted to the upper few inches of soil by the frequent waterlogging of the layers above the claypan, and the resulting reduction in aeration and activity of beneficial bacteria. Some basinlike areas that have no outlet for surface drainage are covered with water for much of the year. Other areas have small drainways or natural outlets that drain surface water slowly. Dark-colored soft and semihard concretions are commonly distributed in the soil layers. When dry, the surface soil is ashy gray or white.

The depth to the claypan varies in most areas. This influences the degree and period of water saturation in the permeable layers above the clay. The subsoil in most areas is prevailing light in color and contains only a few small mottles, but in some areas this layer is moderately mottled because local underdrainage is slightly impeded.

The soil includes small areas of Routon soil that has a less distinct hardpan and of Calloway soils that are somewhat better drained. These inclusions produce better crop yields.

About 4 percent of the soil area has slopes of 2 to 5 percent. These more sloping areas occur as narrow bands, mainly along drainageways that have cut a few feet below the general level of the soil. In cleared areas some soil material has been eroded by surface washing.

Use and management.—About 60 percent of Henry silt loam is in woodlots, about 25 percent is idle, and the rest is used for crops and pasture. Usually the soil is farmed with adjoining soils, and generally only the edges are used for row crops. Corn, lespedeza, and redtop are the principal crops, and a few areas are used for sorghum. Crop yields are low, and in wet and extremely dry seasons failures occur frequently.

The suitability of this soil for crops is significantly restricted by poor drainage. At the proper moisture content, the soil is easy to till. It is very low in humus and lime and very deficient in available phosphorus and potassium. During dry periods in summer and fall, crops may be injured from lack of moisture because the soil is low in water-supplying capacity. Those areas without natural drainage outlets are probably best used for trees or pasture.

The soil is not suited to cotton, red clover, wheat, tobacco, or alfalfa. Soybeans, cowpeas, sorghum, redtop, and lespedeza grow fairly well in areas where surface drainage has been improved. Corn makes a satisfactory yield only in years having a very favorable distribution of rainfall. Fescue and whiteclover are probably among the better adapted crops, but heavy applications of amendments are necessary to maintain satisfactory yields.

The larger areas of this soil possibly are best used for pasture, but fertilizers are necessary to increase the low average yields. Wooded areas should remain in trees.

Hilly land, Coastal Plain material (12 to 35 percent slopes) (HI, 15).—This land type is on moderately steep ridge slopes that have been covered by materials of extremely variable texture. These materials are chiefly sandy clay and clay. The small- and medium-sized areas of this land occur chiefly in the Dulac-Hymon-Tippah soil association. They are associated with areas of Tippah, Dulac, Providence, Lax, Lexington, and Ruston soils. In fact, many of these soils are intricately intermingled within this mapping unit. The natural cover is an oak-hickory forest, but a few yellow-poplar, dogwood, and cedar are included.

The dominant profile for this land type, most nearly like that of the Cuthbert series, is described as follows:

0 to 8 inches, light brownish-gray to pale-brown very friable fine sandy loam or loamy fine sand; contains, in places, thin platy cemented fragments of sandstone material; upper inch or so stained with decayed organic matter; 6 to 12 inches thick.

8 to 24 inches, yellowish-red or reddish-yellow, slightly micaceous, plastic very fine sandy clay or fine sandy clay; shows a few faint splotches of gray, yellow, and red in the upper part; mottles become numerous and distinct in lower part; contains thin stratum of platy hardened sandstone; 12 to 20 inches thick.

24 to 52 inches, reddish-yellow or yellow very plastic fine sandy clay or clay; contains many distinct streaks and splotches of red, yellow, and gray material; sticky and plastic when wet; very hard and brittle when dry; 20 to 35 inches thick.

52 inches +, reddish-yellow to yellow sandy clay considerably mottled with gray, brown, and yellow; contains thin lenses of gray clay and thin, platy, cemented beds of sandstone; varies in texture, consistence, degree of mottling, thickness, and arrangement of bedded material.

This land type is strongly to very strongly acid throughout and very low in organic matter and plant nutrients. It has a moderately low water-supplying capacity. The upper sandy layers are permeable to roots, air, and water. The subsoils vary considerably in permeability, but most of them are moderately to slightly permeable. Surface runoff is rapid, and internal drainage is slow. Small, thin platy fragments of sandstone are scattered over the surface and in the profile. In some places these fragments are large and numerous enough to interfere with tillage. Waterworn gravel also is abundant in places.

Differences in thickness, color, texture, and consistence of the various layers occur at short intervals in most areas. These differences indicate minor differences in productivity, erosion hazard, drainage, and other factors.

A few small areas of this unit have slopes less than 12 percent and several have slopes greater than 35 percent. A few acres have a thin covering of silty material and have developed like the Dulac soils. About 6 percent of this separation is composed of Susquehanna fine sandy loam, which has a gray or grayish-yellow surface soil underlain by a tough, very plastic, sticky, dense reddish clay subsoil highly mottled with yellow and gray.

Use and management.—All of this land type is in woods or is part of larger forests. The woods have been cut over several times, and most of the good timber has been removed. The present stand consists mostly of small- and medium-sized trees, and it contains many culls. Part of this mapping unit is in a game reserve.

This land type is very poorly suited to crops or pasture because of its very low natural fertility, steepness and irregularity of slopes, and great susceptibility to erosion when cleared. It is difficult to work and conserve. The soil is very low in humus, lime, and plant nutrients. It is associated with other steep soils of limited suitability. Some areas are difficult of access. It appears better to keep this land type in woods than to clear it for farming.

Hilly eroded land, Coastal Plain material (12 to 30 percent slopes) (Hm, 15).—This mapping unit has many types of profiles in an intricate pattern. The parent material is chiefly heavy sandy clay interbedded with gray clay. Slopes are very irregular, and some are less than 12 percent. The unit is widely distributed over the eastern half of the county in small areas. It is associated with Dulac, Lax, Providence, and Ruston soils. It differs from Hilly land, Coastal Plain material, chiefly in being eroded. A varying but significant quantity of the original surface layer has been carried away by erosion. In places all of the surface soil is gone, and some of the upper subsoil material also. Shallow gullies have formed over most areas. In places, the mixing of the remnants of the former surface layer with the upper subsoil has produced a heavier texture in the present plow layer. Small severely eroded spots exposing the subsoil are common and conspicuous in some areas.

This land type is strongly to very strongly acid. It is low in organic matter, in water-supplying capacity, and in mineral plant nutrients. Runoff is rapid, but internal drainage is moderately slow. Thin platy fragments of cemented sandstone material are rather numerous over the surface and through the soil. In places these fragments are large and abundant enough to hinder tillage. The subsoil is only moderately permeable to roots, air, and moisture, but the material above it is permeable.

Use and management.—All of this land type was cleared of timber. Most of it is now idle or in unimproved pasture. Only a very few acres are used with adjoining soils for crops. Yields average very low. A part of this land is in a game reserve controlled by the TVA. Most of the reserve is on steep more or less eroded hills that have low productivity and are not good farmland.

This unit is very poorly suited to general crops or pasture because of its eroded condition, steep slopes, low fertility, low water-supplying capacity, and poor tilth. The steep slopes are difficult to work and conserve. Tillage is hindered where the surface is cluttered with many sandstone fragments. Satisfactory and even stands of pasture are difficult to establish and maintain. Yields average low even when soil amendments are used. To prevent further erosion and deterioration of this land type, it is advisable to plant trees.

Huntington silt loam (0 to 3 percent slopes) (Hv).—All of this soil is now covered by Kentucky Reservoir. It was a fertile, well drained soil of the bottom lands along the Tennessee River. The parent material was mostly silt and clay sediments. These originated chiefly from limestones, but smaller amounts came from Coastal Plain and loessial materials, sandstones, and shales and micaceous rocks of the Appalachian Highland. The soil was nearly level or

gently undulating, and all of it was subject to flooding. It was associated with Lindside, Lobelville, and Egam soils and with other Huntington soils. Most areas were a little higher than those of the Lindside soil.

Profile description:

0 to 12 inches, dark-brown friable silt loam; in places more nearly brown; 6 to 18 inches thick.
12 to 30 inches, dark-brown somewhat firmer but friable silty clay loam; 10 to 30 inches thick.
30 inches +, dark yellowish-brown, grading to yellowish-brown weakly splotched with gray, friable silt loam.

There was a noticeable amount of sand in the lowest layer and a few mica flakes throughout the soil. The reaction was slightly acid to neutral. The content of organic matter was moderate, fertility was high, and tilth was good. It was one of the most productive soils of the bottom lands.

Use and management.—Practically all of this soil was cleared, and much of it was used for corn. It was well suited to corn, soybeans, certain hay crops, and pasture. Under average conditions, corn yielded about 50 bushels and lespedeza about 1.2 tons an acre.

Huntington fine sandy loam (0 to 3 percent slopes) (Hu).—All of this soil is now covered by Kentucky Reservoir. It was a moderately sandy, well-drained soil on bottom lands along the Tennessee River. The parent material consisted of the coarser sediments that originated chiefly from various grades of limestone, Coastal Plain formations, sandstones and shales. A smaller part of the parent material was derived from granites, gneisses and schists of the Appalachian Highland. Most of the acreage lay as undulating or gently billowing strips on natural levees next to or near the main channel. The soil was associated with Lindside soils and with other Huntington soils. The areas were a little higher than most Huntington and Lindside soils, but were nevertheless subject to periodic flooding.

Profile description:

0 to 12 inches, grayish-brown or brown fine sandy loam; 6 to 14 inches thick.
12 to 36 inches, light-brown fine sandy loam; 10 to 30 inches thick.
36 inches +, sandy alluvium, or stratified silt and sand in some places; 10 feet or more thick.

The soil was slightly acid, very permeable, and free of stones and gravel. Compared to most soils of the upland, it was moderately high in organic matter and plant nutrients but not so high as Huntington silt loam. The water-holding capacity was moderate.

Use and management.—Most of this soil was cleared and used for crops, chiefly corn and hay. Under common management, corn yielded about 30 bushels and lespedeza hay about 1.2 tons an acre. The soil responded well to good management, especially to fertilization.

Hymon silt loam (0 to 2 percent slopes) (Hs, 2).—This is an imperfectly drained silty soil on stream bottoms that are subject to overflow. The mixed alluvium from which the soil formed has washed from uplands of loess and Coastal Plain materials. The loess apparently predominates. Hymon silt loam occupies parts of many low bottoms in all sections of the county. Most areas lie along or at the

heads of small narrow tributary drainageways or intermittent streams. Here they occur in long narrow areas in association with Ruston, Lexington, Loring, Dulac, and Providence soils of the uplands and with Briensburg soils of the colluvial areas. In the broader bottoms of the main creek valleys, they are closely associated with the better drained Shannon soils and the more poorly drained Beechy soils. The forest cover is mixed hardwoods that tolerate a high water table.

Profile description:

0 to 14 inches, brown to grayish-brown smooth very friable silt loam; 8 to 18 inches thick.
14 to 24 inches, light yellowish-brown to brownish-gray smooth friable silt loam splotched and streaked with gray and strong brown; 4 to 14 inches thick.
24 to 36 inches, light brownish-gray or gray friable silt loam having many distinct light-gray and strong-brown mottles; 8 to 16 inches thick.
36 inches +, friable silt loam material interbedded with an occasional layer of sandy material; variegated in shades of gray, brown, and yellow; 2 to 8 feet or more thick.

This soil is strongly to very strongly acid and has a moderate content of organic matter. The supply of plant nutrients is moderate to low. Potassium is especially low in many places. The soil material is permeable to air, water, and roots. The subsoil is saturated during wet seasons, and the intermittent high water table tends to restrict the root system to the upper part of the soil and to limit aeration. Surface runoff is slow because of nearly level relief, and internal drainage is slow. The water-supplying capacity is very high. A few small rounded concretions are distributed through the soil. In places these concretions are quite numerous in the subsoil layers.

Use and management.—About 35 percent of the soil is in timber. Most of the open land is used for corn, lespedeza, and pasture (pl. 4, *B*). Cotton and sorghum are grown on a few acres. Corn may be grown on some fields year after year without fertilizing. Some of the land remains idle the entire year if the ground is too wet for planting in the spring.

The use suitability of Hymon silt loam is somewhat limited because it is imperfectly drained and is likely to be flooded. It is a productive soil, however, for corn, hay, and pasture. The soil is moderately easy to work and easy to conserve and keep in good tilth. Early preparation of the soil may be delayed in the spring. Artificial drainage would increase average expected yields but, because of the susceptibility to flooding, would not broaden use suitability much.

Hymon fine sandy loam (0 to 2 percent slopes) (Hr, 2).—This is an imperfectly drained sandy soil on bottom lands that are subject to flooding. It consists of mixed stream deposits that were washed from upland soils derived from loess and Coastal Plain materials. Sandy areas predominate. Most areas of Hymon fine sandy loam are in the narrow bottoms formed by small intermittent streams. In such locations they are associated with upland soils such as the Ruston, Lexington, Guin, and Providence. In the larger, wider bottoms, this soil occurs in narrow bands parallel to the stream channel and is associated with Beechy and Shannon soils. The soil formed under a growth of moisture-tolerant hardwoods.

Profile description:

0 to 14 inches, grayish-brown or brown very friable fine sandy loam; 8 to 18 inches thick.
14 to 24 inches, very friable fine sandy loam, loam, or silt loam, dominantly brownish gray in color but splotched with gray, brown, and yellow; 10 to 25 inches thick.
24 inches +, gray stratified beds of sandy and silty materials splotched with strong brown and yellow; contains thin layers of gravel in some places; 2 to 8 feet or more thick.

Hymon fine sandy loam is strongly to very strongly acid and moderately low in organic matter and plant nutrients. Its water-supplying capacity is high. The soil layers are permeable to air, water, and roots, but a fluctuating high water table restricts most of the plant roots to the upper part of the soil. Gravel occurs in places, frequently in the small outwash fans at the mouth of drainageways that empty into larger valleys. Concretions have developed in the several layers of the soil, but they are most numerous in the mottled material. The texture of the upper layer of the soil varies to include small patches of loam and silt loam material.

Use and management.—About 60 percent of Hymon fine sandy loam has been cleared and is used for crops and pasture. Much of the cleared land produces corn. In many fields corn has been grown every year for many years. Corn yields are fairly high without fertilizers, which are seldom used. Lespedeza is the principal hay crop. A few acres are used for sorghum and cotton. Some fields that are associated with Beechy soils are idle and are growing up to brush, briers, and native weeds.

Imperfect drainage and chance of being flooded are the chief limits on the use of this soil. It is well suited for corn, hay, and forage crops. The soil is moderately easy to work, and easy to conserve and to keep in good tilth. It is very easy to work at the proper moisture conditions, but tillage is frequently delayed by the wetness of the soil. The supplies of lime and organic matter are low, and the soil is deficient in phosphorus and potassium. In general, the productivity is a little lower than that of Hymon silt loam. The average crop yields would be increased by artificial drainage. The sandy and porous surface allows rapid percolation of surface water, and therefore it normally can be worked fairly early in spring. Drainage might make this soil suitable for a few additional crops, but susceptibility to flooding would prevent any great increase in the kinds of crops that would be suitable.

Hymon and Beechy silt loams (0 to 2 percent slopes) (Hy, 2).—This mapping unit consists of poorly and imperfectly drained soils of the bottom lands that are subject to periodic flooding. In places, both soils occur in such an irregular and intricate pattern that the individual areas cannot be easily separated on the soil map. Some areas consist dominantly of either Hymon silt loam or Beechy silt loam. In such areas, the soil is commonly intermediate in drainage between the most typical areas of the two soils.

The soils were formed from recent mixed alluvium that washed from uplands derived from loess and sandy Coastal Plain materials. They are members of the Shannon, Hymon, and Beechy group of

soils, in which the Beechy is the most poorly drained, the Shannon is best drained, and the Hymon intermediate between the two.

Hymon soils are slightly higher than Beechy soils, but the difference may be only several inches. The forest cover was mixed hardwoods, chiefly water-tolerant oaks and some hickory, ash, sweetgum, sycamore, tulip-poplar, elm, beech, and willow.

Profile descriptions:

Hymon silt loam—
- 0 to 14 inches, light brownish-gray, brown, or grayish-brown mellow very friable silt loam; 6 to 10 inches thick.
- 14 to 24 inches, brownish-gray or light yellowish-brown smooth friable silt loam showing many distinct light-gray and strong-brown splotches; 8 to 15 inches thick.
- 24 inches +, gray stratified layers of silt loam and sandy material that are streaked and splotched with strong brown, yellow, and light gray; 3 to 10 feet or more thick.

Beechy silt loam—
- 0 to 6 inches, gray or light brownish-gray smooth very friable silt loam specked with strong brown.
- 6 to 30 inches, light-gray smooth friable silt loam having numerous strong-brown splotches; 18 to 30 inches thick.
- 30 inches +, light-gray or gray friable silt loam interbedded with layers of sandy material splotched with strong brown; 4 to 10 feet or more thick.

In most places, the two kinds of soil merge gradually and have no sharp, well-defined boundary. Each area of one soil contains some of the other soil.

The Beechy soil has a lighter colored surface layer than the Hymon soils. It also has a higher water table and is more likely to be saturated. The Hymon soil occurs on slightly higher positions, many of them next to shallow depressions or drainageways; but the areas are too small to outline on the soil map. Recent deposits of material 2 to 4 inches deep have been laid down on parts of the Beechy soil. These deposits improve the fertility somewhat.

Both soils are strongly to very strongly acid, low in organic matter, and deficient in plant nutrients. The Beechy soil is more highly leached than the Hymon. The materials of both soils are permeable to air, water, and roots. The depth of aeration and of rooting is restricted by the height of the water table. The relief is nearly level; consequently, surface runoff is very slow. Internal drainage is slow. Numerous puddles dot the Beechy soil for a while after a prolonged rain. Concretions are distributed throughout the soils, especially in the subsoil.

Small patches of Hymon and Beechy fine sandy loams occur in some areas. Some soils in this unit have a dark-gray or very dark gray surface layer, 6 to 12 inches deep, underlain by material characteristic of the Hymon soil. This inclusion differs chiefly in having a darker colored top layer and a larger supply of organic matter. Most of this variation is wooded, but a few acres are used for corn.

Use and management.—A little less than half of this land type has been cleared for farming. About 60 percent of the cleared land is used for growing corn, and about 20 percent for hay, mainly lespedeza. A few acres are in whiteclover, sorghum, cotton, or other crops. The rest is idle, sometimes because it was wet too late in the spring

to be prepared for a crop. Corn may be grown for 1 or 2 years, and the field then left idle or in volunteer pasture for several years. Some fields are in corn every year. Yields of corn and pasture are moderate. Many pastures consist of low-quality herbage, mainly water-loving grasses, sedges, and reeds.

Inadequate drainage and susceptibility to overflow determine the kinds of crops that can be grown satisfactorily. The soils have medium to moderately low productivity and are easy to work when they contain the proper amount of moisture. Tillage is often delayed by wetness. Providing enough drainage for crops is a major problem. Supplies of lime and humus are very low. Potassium and phosphorus seem to be deficient. Corn, soybeans, lespedeza, sorghum, white-clover, alsike clover, redtop, and fescue are suited to these soils. Fall-sown grains and perennial hay crops may be damaged by floods and waterlogging. Artificial drainage will help to broaden the use of these soils, and increase yields.

Hymon and Beechy fine sandy loams (0 to 2 percent slopes) (Hx, 2).—This unit contains light-colored, low bottom-land soils that have poor to imperfect drainage. They are flooded periodically. Both of the soils have formed from recent deposits of mixed alluvium that washed from upland loess and sandy Coastal Plain materials. Sandy materials. predominate in both soils. In places these soils are too intricately associated to be outlined separately on the soil map. In many places they merge without distinct boundaries. Some areas consist dominantly of one soil or the other. In general, the Beechy soil occupies the most poorly drained sites and the Hymon the slightly higher and better drained positions. Runoff is very slow because of the nearly level relief, and heavy rains leave many puddles on the surface. Internal drainage is slow, and a high water table keeps the soils saturated for much of the year.

These soils occur mainly in the more narrow valleys and ravines formed by tributary branches or intermittent drainways that feed into larger creeks. Some areas occur also on natural levees in the broader flood plains throughout the county. The native cover consists of water-tolerant mixed hardwoods.

The unit is like Hymon and Beechy silt loams except that it has a fine sandy loam surface soil. The soils are strongly to very strongly acid and very low to low in content of organic matter. The water table is at or near the surface during rainy periods. The soils are permeable, but depth of air circulation and root penetration depends on the water table. During the drier periods of summer, the soils usually continue to have a high water-supplying capacity.

Use and management.—About half of this unit still remains in woods. These woods supply firewood, fence posts, and some trees large enough for rough lumber. The cleared land is used mainly for corn, lespedeza, and pasture crops. Some land is idle and has a poor stand of native grasses, sedges, reeds, briers, and volunteer pasture. This growth is grazed occasionally by a few head of stock. A few acres are farmed for cotton and sorghum.

Inadequate drainage and occasional floods considerably limit the kinds of crops that can be grown profitably. The soils are easily worked at the right moisture content and are easy to conserve.

Supplies of lime and organic matter are low. The soils are somewhat deficient in mineral plant nutrients.

Corn, lespedeza, soybeans, and sorghum are fairly well suited. Fall-sown grain and perennial hay crops are likely to be damaged by floods and excess moisture. Row crops may be grown in successive years without serious damage to the soils, but fertilization is required for continued high yields. Improvement in drainage will increase average yields and broaden the use suitability somewhat, but the chance of flooding will still limit the variety of crops that can be grown.

Lax silt loam, undulating phase (2 to 5 percent slopes) (La, 7).—This is a moderately well drained siltpan soil overlying gravelly material on ridgetops of rough hilly uplands. The parent material consists of windblown silt, about 2 to 4 feet deep, that has been deposited on partially cemented gravel. The soil is associated with Brandon, Loring, and Guin soils in the northeastern part of the county, chiefly in the Brandon-Guin-Lax soil association. It is like Brandon soils except that it has a distinct siltpan. It differs from Providence soils chiefly in being underlain by gravel and having a thicker, more compact siltpan. Mixed hardwoods, mostly oaks and hickories, were the native cover.

Profile description:

0 to 1 inch, dark-gray or dark grayish-brown very friable silt loam covered by forest litter.
1 to 6 inches, grayish-brown or pale-brown smooth very friable silt loam; weak thin platy or weak medium crumb structure; 5 to 8 inches thick.
6 to 16 inches, yellowish-brown or brownish-yellow friable silty clay loam; weak medium blocky structure; 8 to 12 inches thick.
16 to 22 inches, brownish-yellow friable silty clay loam that has a few medium, distinct, light-gray and strong-brown mottles; 4 to 8 inches thick.
22 to 36 inches, siltpan of compact brownish-yellow silty clay loam or silt loam mottled with gray, yellow, and brown; 12 to 20 inches thick.
36 inches +, mixture of waterworn chert, quartz, and sandstone gravel and sandy soil material extending to depths of 25 feet or more; upper layers of gravel are weakly cemented and slowly permeable to water.

The soil is strongly to very strongly acid and low in organic matter. The upper soil layers are readily permeable to roots, air, and water, but the siltpan is only slightly permeable. The soil has a moderate water-supplying capacity. Surface runoff is slow. Internal drainage is slow because it is restricted by the siltpan. There are no stones or gravel above the siltpan.

Use and management.—Nearly all of this soil is in woods. The woods have been cut over several times, and most of the salable timber is gone. The present stand includes many young and poor-quality trees. Growth is slow, and grazing cattle injure many trees.

The soil would favor most crops of the county, but it is somewhat limited by its restricted drainage. Corn, cotton, tobacco, sweetpotatoes, lespedeza, red clover, sericea, and whiteclover are fairly well suited. The soil is easy to work, moderately easy to conserve and keep in good tilth, and moderately productive of adapted crops. Most areas are on narrow ridge crests between steep forested soils. Such areas, unless associated with other soils suited to crops, are probably best used for trees. Fertility and water-supplying capacity are moderate to low; consequently, crop yields are only moderate. Most crops require fertilization for satisfactory yields, and many, like

red clover, cannot grow without it. Alfalfa does very poorly, no matter how it is managed.

Lax silt loam, eroded undulating phase (2 to 5 percent slopes) (Lb, 7).—This moderately eroded, moderately well drained, siltpan soil has developed on ridgetops. It formed from a mantle of loess about 25 to 40 inches thick over stratified beds of gravel. It is like the undulating phase but has lost a significant amount of soil by erosion. It differs from the corresponding phase of Providence silt loam in being underlain by gravel rather than sand.

In all areas, part of the original surface layer has been carried away by erosion; the remainder varies from 0 to 7 inches in depth within short distances. In places cultivation has mixed the surface and subsoil. Patches of severely eroded soil are common, and in these the exposed subsoil is conspicuous.

The present surface layer consists of grayish-brown or pale-brown to yellowish-brown friable silt loam. The subsoil is a yellowish-brown to brownish-yellow friable silty clay loam underlain by a siltpan at a depth of about 22 inches. Areas of this soil are widely distributed over the northeastern part of the county; they are associated chiefly with Brandon, Guin, and Loring soils, and with other Lax soils.

The soil is strongly to very strongly acid, low in organic matter, and deficient in plant nutrients. Surface runoff is slow. Internal drainage is slow because it is retarded by the siltpan. The water-supplying capacity is only moderate, and the soil tends to extremes in moisture content. The upper layers of the soil are readily permeable to roots, air, and moisture, but the siltpan is only slightly permeable. The upper soil is almost entirely free of stones and gravel. The siltpan may contain gravel in places. Some small areas of Brandon and Loring soils are included.

Use and management.—All of this soil was once cleared for corn, cotton, oats, and lespedeza. Most areas are now idle, but a few are used occasionally for native pasture. A few acres are farmed with adjoining soils for general field crops.

The soil will grow most of the common crops of the county, but average yields are low. The soil warms up rather late in spring but is easy to work when moisture is right. It is fairly easy to keep the soil in good tilth, to control runoff, and to prevent erosion. The soil fluctuates considerably in moisture content with the seasons, and crops may be injured by drought during summer. Among the common crops suited to this soil are corn, cotton, tobacco, soybeans, cowpeas, lespedeza, crimson clover, wheat, oats, barley, vetch, white and red clovers, potatoes, orchardgrass, and redtop. Legumes such as alfalfa are not well suited. Fertilization is necessary for satisfactory yields of most crops and is essential for the growth of some.

Lax silt loam, rolling phase (5 to 12 percent slopes) (Lc, 8).—This is a moderately well drained siltpan soil that occurs mostly on the upper slopes near ridgetops in very hilly terrain. The parent material is loess, 25 to 40 inches thick, that has been deposited on gravel beds in upland areas. This unit is distributed through the Brandon-Guin-Lax soil association along with Brandon, Guin, and Loring soils. The deciduous forest cover consisted principally of oak and hickory.

The surface layer is grayish-brown or pale-brown very friable mellow silt loam ranging from 6 to 8 inches thick. The subsoil, a yellowish-brown or brownish-yellow friable silty clay loam, contains some light-gray and strong-brown mottles in the lower part. This layer is underlain at 18 to 24 inches by a compact siltpan.

The soil is strongly to very strongly acid and low in organic matter. Layers above the siltpan are permeable to air, moisture, and roots, but the siltpan is only slightly permeable. Surface runoff is medium. Internal drainage is slow and impeded considerably by the siltpan. The soil has a moderate water-supplying capacity for crops. Little gravel is in the layers above the siltpan.

Use and management.—Nearly all of the soil is a part of larger areas of woodland. Its forest cover has been cut over a number of times. Nearly all the better grade, salable trees have been removed. The present stand is composed mainly of young and poor-quality trees. Those large enough may be cut for crossties, and some are used for firewood.

This soil is well suited to crops when cleared. It is moderately productive and is moderately easy to work and keep in good tilth. The slopes make it erodible and moderately difficult to conserve. Most of the soil is associated with steeply sloping soils that are poorly suited to cultivated crops. In such combinations, the soil cannot be efficiently used for crops or pasture. On most farms it probably should be kept in forest. Other areas can be farmed successfully if the adjoining soils are suitable for crops. This soil is suited to corn, cotton, tobacco, small grains, hay grasses, and shallow-rooted legumes. It is not well adapted to such deep-rooted legumes as alfalfa, but sericea lespedeza can be grown, even without fertilizer.

Lax silty clay loam, severely eroded rolling phase (5 to 12 percent slopes) (Ld, 9).—This moderately well drained siltpan soil has developed on upper slopes or on ridge crests in a rough, hilly landscape. The parent material, a mantle of windblown silts 25 to 40 inches thick, accumulated on stratified gravel. This soil occurs mainly in small areas in the northeastern part of the county. It is associated with Guin, Loring, and Brandon soils. The soil has stronger slopes and is more severely eroded than Lax silt loam, undulating phase. Much or all, of the original top layer has been removed by erosion. The present surface layer consists of remnants of the original surface layer mixed with subsoil material. Gullies have cut into the subsoil in many areas, and in places the underlying gravel is exposed.

Erosion and cultivation have left a plow layer of mixed color and texture. It is pale-brown, grayish-brown, and yellowish-brown in color and friable silt loam, heavy silt loam, or silty clay loam in texture. The subsoil consists of yellowish-brown or brownish-yellow moderately friable silty clay loam, 12 to 20 inches thick. The lower part of the subsoil is somewhat lighter in color and is splotched with light-gray and strong-brown mottles. The transition from the subsoil to the compact siltpan is abrupt.

The soil is strongly to very strongly acid and very low in organic matter and plant nutrients. The surface soil and subsoil are permeable to roots, air, and water, but the siltpan is only slightly permeable. Surface runoff is medium, but internal drainage is restricted

by the slowly pervious siltpan. The soil may receive seepage water from higher soils. The water-supplying capacity is very low.

Use and management.—All of this soil has been cleared and used for general crops. Most of it is now idle or is used occasionally for its poor volunteer pasture. A few acres are farmed with adjoining soils for field crops.

The soil has been severely damaged by erosion. It has very low productivity for crops or pasture. Small patches of exposed subsoil material are bare of vegetation or have a few stunted plants. The soil is hard to work and to keep in good tilth. It is difficult to conserve because of its low fertility and the likelihood of further erosion. Moisture supplies fluctuate widely. In extended dry periods the soil is droughty, and crops are injured. Its supply of lime, organic matter, and plant nutrients is low. The soil is probably best suited to pasture or trees. It is more suitable for pasture plants if amendments are applied. Most grasses and legume pasture plants used in the county can be grown on this soil under good management.

Lexington silt loam, undulating phase (2 to 5 percent slopes) (Le, 4).—This is a well-drained shallow brown soil on upland ridges. Its parent material consisted of shallow deposits of silty windblown material, normally less than 3½ feet deep, that were deposited upon unconsolidated Coastal Plain sands (pl. 6, *A*). This soil is similar to Memphis soils in drainage and other features but is considerably more shallow to the underlying sand. It also resembles Providence and Dulac soils but is better drained and has no hardpan. Areas of this soil are widely distributed over the county in association with Memphis and Ruston soils and with other Lexington soils. It occurs chiefly in the Memphis-Lexington-Ruston, the Providence-Lexington, and the Lexington (Lexington-Ruston) associations. The native forest was mixed hardwoods, mostly oak and hickory.

Profile description:

0 to 2 inches, dark grayish-brown very friable mellow silt loam stained by organic matter.
2 to 7 inches, grayish-brown or brown very friable mellow silt loam; moderate medium crumb structure; 3 to 6 inches thick.
7 to 12 inches, brown to strong-brown friable heavy silt loam; moderate medium crumb to weak fine blocky structure; 4 to 6 inches thick.
12 to 28 inches, strong-brown to reddish-brown or yellowish-red friable silty clay loam; moderate medium blocky structure; 10 to 16 inches thick.
28 to 34 inches, yellowish-red to reddish-brown friable heavy silt loam or silty clay loam grading to clay loam or sandy clay loam; this is an irregular transitional layer 4 to 10 inches thick.
34 to 60 inches, red friable clay loam or fine sandy loam Coastal Plain material; varies in texture and color from one place to another.

This soil is medium to strongly acid and medium in content of plant nutrients and organic matter. It is permeable throughout to air, water, and plant roots. Surface runoff is moderately slow, and internal drainage is medium. The water-supplying capacity is high.

About 20 percent of this soil has been cleared and cultivated. During cultivation the upper layers of the profile have been mixed to form a pale-brown or brown friable silt loam plow layer. Soil loss from erosion has been very slight and has not seemed to reduce fertility below that of woodland areas.

Use and management.—About 80 percent of this soil is in woodlots. Nearly all the mature and better salable trees have been cut. The present moderately good stand of mostly small- to medium-sized trees yields firewood, fence posts, and other wood products. Cleared areas are used mainly for corn, cotton, lespedeza, and grass hay. A few acres are in alfalfa, whiteclover, crimson clover, and small grains.

The soil is well suited for all crops common to the region. Some crops yield well without fertilization, but most crops need fertilizers for continued high yields. Red clover and alfalfa can be successfully produced only if fertilized. The soil is very easy to work, easy to conserve, and easy to keep in good tilth. It is suitable for intensive cropping if short crop rotations are followed. This is one of the best upland soils in the county. It can produce high yields of many kinds of crops if it is managed at a high level.

Lexington silt loam, eroded undulating phase (2 to 5 percent slopes) (Lf, 4).—This is a well-drained brown soil of the uplands. The parent material consists of a mantle of silty loess, less than 3½ feet thick, that has been deposited upon sandy Coastal Plain material previously laid down. The soil occurs on ridgetops. It is bordered by moderately to deeply dissected belts of Ruston soils and by other phases of the Lexington series. It occurs in the Lexington (Lexington-Ruston), the Lexington-Ruston, the Providence-Lexington, and the Memphis-Loring-Lexington soil associations.

From 25 to 75 percent of the original surface layer has been lost. The remaining surface soil varies in thickness. It is a brown to strong-brown friable silt loam. The subsoil is a strong-brown to reddish-brown or yellowish-red friable silty clay loam. Small patches of exposed subsoil are common. Gullies a few inches deep often form in cultivated fields during a hard rain.

The soil is medium to strongly acid, low in content of organic matter, and moderate in content of plant nutrients. It has a high water-supplying capacity. All the soil layers are permeable to air, water, and roots. Surface runoff is moderately slow, and internal drainage is medium.

The depth of the soil to the underlying sandy material varies considerably within each area; the range is from a few inches to about 42 inches. In a few acres in the southeastern part of the county, the soil is very shallow and complexly patterned with irregular patches of Ruston fine sandy loam. In some areas the surface layer has a lighter color than typical and dries to a grayish tint. The subsoil may be yellowish brown.

Use and management.—All of this soil is cleared, and most of it is used intensively for general farm crops and pasture. Corn, cotton, lespedeza, alfalfa, wheat, whiteclover, sweetpotatoes, soybeans, and hay are grown. Some areas on the long narrow ridge crests bounded by steep slopes are left idle or grazed occasionally for the volunteer pasture.

This is a moderately fertile soil. When properly managed, it produces nearly all crops common to the region, including alfalfa, small fruits, and tree fruits. The soil has good tilth, a high water-supplying capacity, and good conservability. Although yields without fertilizer are higher than for many of the associated upland soils, this soil

readily responds to fertilizer and to other good management. Short systematic rotations that include legumes can be used.

Lexington silt loam, rolling phase (5 to 12 percent slopes) (Lg, 5).—This is a well-drained brown silty soil on ridgetops and gentle upland slopes. It has formed from a 2- to 3-foot layer of silt that overlies stratified beds of Coastal Plain sand. It occurs principally in small areas widely distributed over the county. It is associated mainly with Memphis, Ruston, Providence, and other Lexington soils. The native vegetation is mixed hardwood forest.

This soil is like Lexington silt loam, undulating phase, in texture, color, and other features, but it is less deep to the underlying sandy material and is more sloping.

The surface layer is a grayish-brown or brown very friable silt loam. The subsoil is strong-brown to reddish-brown or yellowish-red friable silty clay loam. The depth to the underlying sand varies considerably. It normally ranges from 18 to 42 inches, but many areas are sandy at the surface. The soil is strongly to very strongly acid, low in organic matter, and deficient in plant nutrients. All layers are permeable to roots, air, and moisture. Surface runoff and internal drainage are medium. The soil has a high water-supplying capacity.

Use and management.—Lexington silt loam, rolling phase, is mostly in woods. The stand varies, but red oak, post oak, white oak, black oak, and hickory ordinarily predominate. Scattered sweetgum, dogwood, yellow-poplar, and beech trees appear in some of the woods. The woodland has been cut over several times and most trees good for lumber have been removed. Timber yields are now low, and many of the trees are of poor quality.

The soil is potentially highly productive. Although it is now wooded, it is well suited to crops and pasture. However, much of it cannot be cropped efficiently because it is isolated by large bodies of steep soil. It is an easy soil to work and keep in good tilth, but would erode easily.

Cleared areas would be suitable for nearly all the more common crops, including cotton, tobacco, small grains, lespedeza, red clover, alfalfa, grass hays, fruits, and vegetables. Fertilization is necessary for growth of crops such as red clover and alfalfa and for continued high yields of most other crops.

Lexington silt loam, eroded rolling phase (5 to 12 percent slopes) (Lh, 5).—This is a well-drained brown silty soil of the uplands. The parent material from which it developed was a thin mantle of wind-blown silt deposited upon beds of pervious sands. Most areas are small and are widely scattered over a large part of the county. They are associated mainly with the Ruston and Memphis soils and with other Lexington soils.

From 25 to 75 percent and, in some places, all of the original surface layer has been washed away. Cultivation mixes the remnants of the old surface layer with subsoil material. Short shallow gullies are common. Some gullies have cut down to the underlying strata and cannot be crossed by heavy implements. The present surface layer consists of brown to strong-brown friable silt loam. The subsoil

is strong-brown to reddish-brown or yellowish-red friable silty clay loam.

The soil is medium to strongly acid, unless it has been limed recently. It is low in organic matter and moderately deficient in plant nutrients. The soil material allows circulation of air and moisture and penetration of plant roots. The water-supplying capacity is moderately high.

Use and management.—All of this soil has been cleared and a considerable acreage is now in general farm crops. Small areas are in pasture. A few acres are idle or used infrequently because they are associated with severely eroded soils or steep hilly soils of low productivity.

This is a moderately productive soil suitable for a wide variety of crops. Its suitability for crops is somewhat restricted by the erosion and susceptibility to further erosion. This soil is easy to work and moderately easy to conserve. It responds to good management and can be maintained at a high production level. All crops generally grown in the county, including corn, tobacco, cotton, wheat, oats, rye, lespedeza, alfalfa, crimson clover, whiteclover, red clover, soybeans, vegetables, and fruit trees, are well suited to this soil.

Lexington silt loam, hilly phase (12 to 25 percent slopes) (Li, 11).—This well-drained, silty, brown soil in the uplands has developed from a shallow layer of loess underlain by pervious sandy Coastal Plain material. It is associated chiefly with Ruston, Memphis, and Providence soils, and with other Lexington soils. Areas occur throughout the county. The native vegetation is mixed hardwood forest.

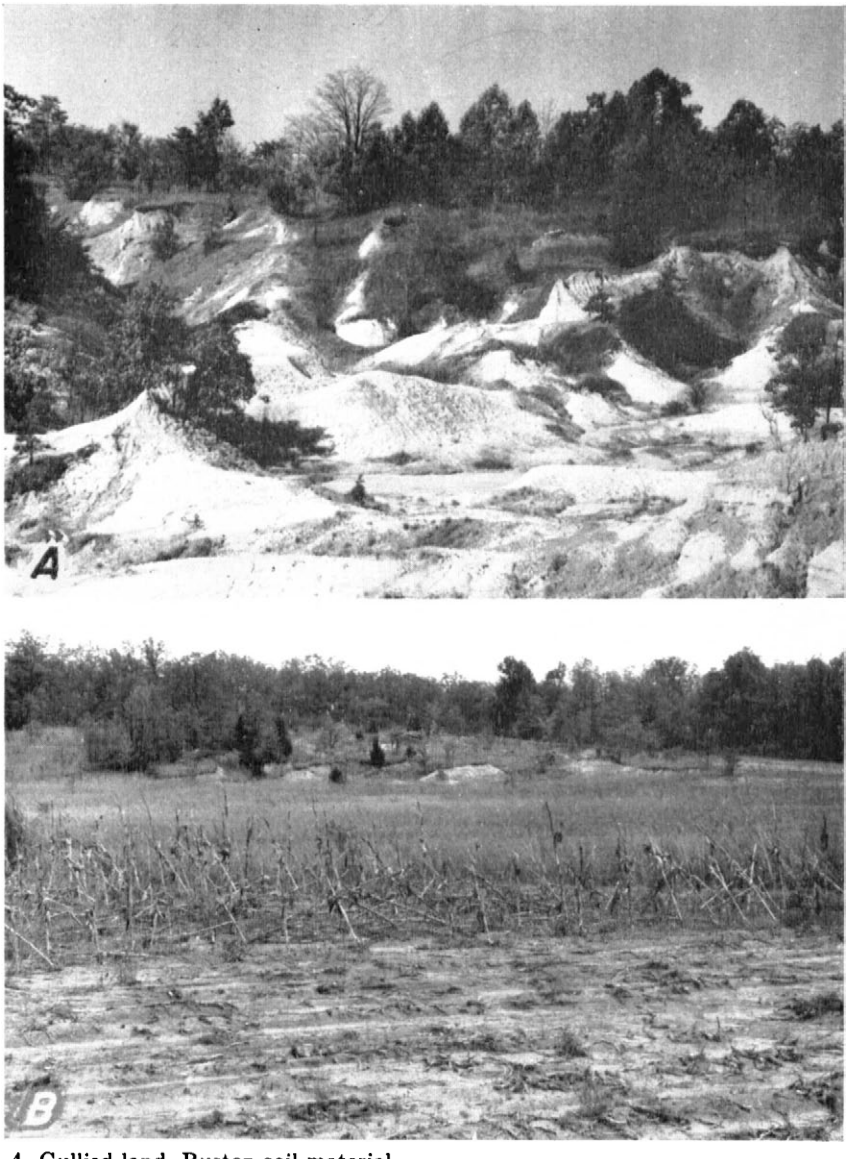
Profile description:

0 to 1 inch, dark-gray or dark grayish-brown mellow very friable silt loam darkened with organic matter.
1 to 6 inches, brown or grayish-brown very friable mellow silt loam; moderate medium crumb structure; 4 to 6 inches thick.
6 to 20 inches, strong-brown, reddish-brown, or yellowish-red friable heavy silt loam to silty clay loam; moderate medium blocky structure; 10 to 16 inches thick.
20 to 24 inches, yellowish-red or reddish-brown friable heavy silt loam or silty clay loam grading to clay loam or sandy clay loam; 3 to 5 inches thick.
24 inches +, red friable pervious clay loam or fine sandy loam grading into sandy Coastal Plain material.

The soil is medium to strongly acid and low to medium in organic matter. It is permeable throughout to roots, air, and water. Surface runoff and internal drainage are medium. The water-supplying capacity is moderately high.

This soil varies more than the rolling phase of Lexington silt loam in depth to sand and degree of horizon differentiation. On a few places small areas of Ruston soils are associated with this soil in a complex pattern.

Use and management.—All of this soil is in woods. Some areas are individual woodlots, but many are a part of larger forests. The forest is an oak-hickory association that includes a few yellow-poplar, beech, and dogwood. Nearly all the mature and commercial grades of trees have been cut. The present forest is a moderate stand of young and medium-sized trees.



A, Gullied land, Ruston soil material.
B, Gullied land, Cuthbert and Dulac soil materials, in background, and a strip of Gully wash (grassed part in middle ground) below it. Briensburg silt loam in the foreground.

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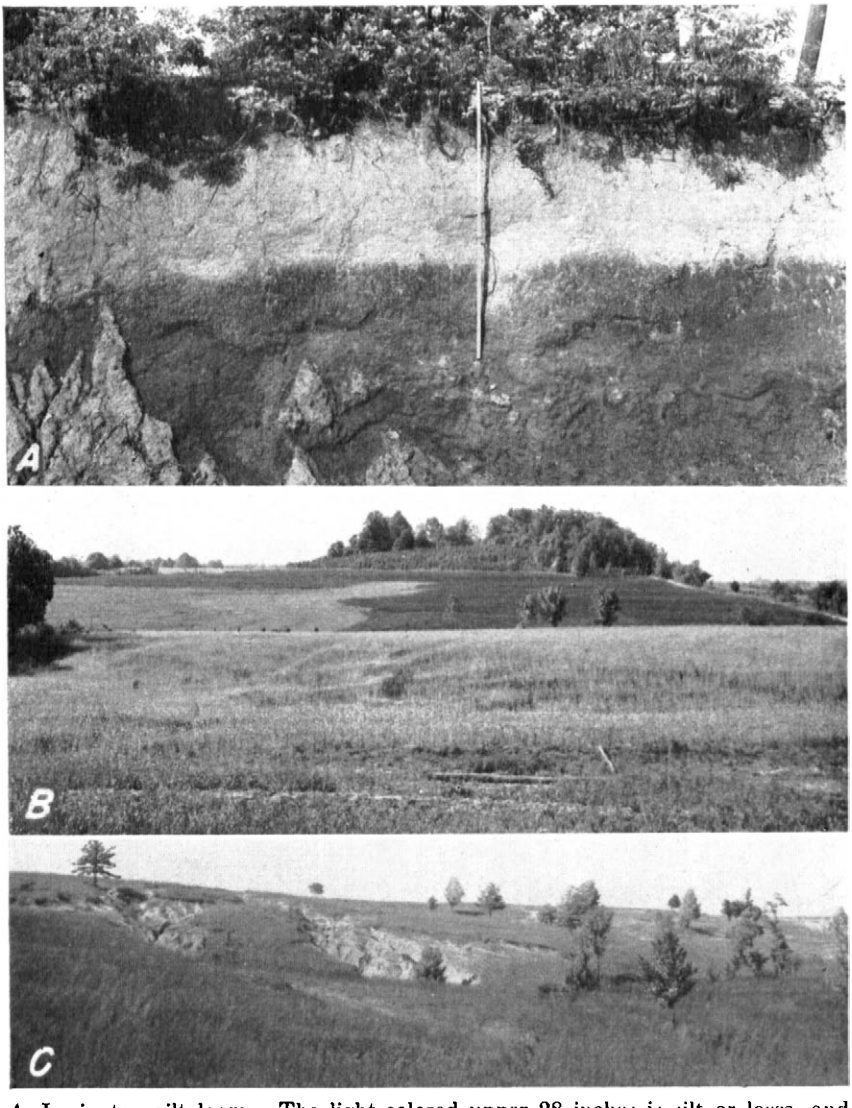
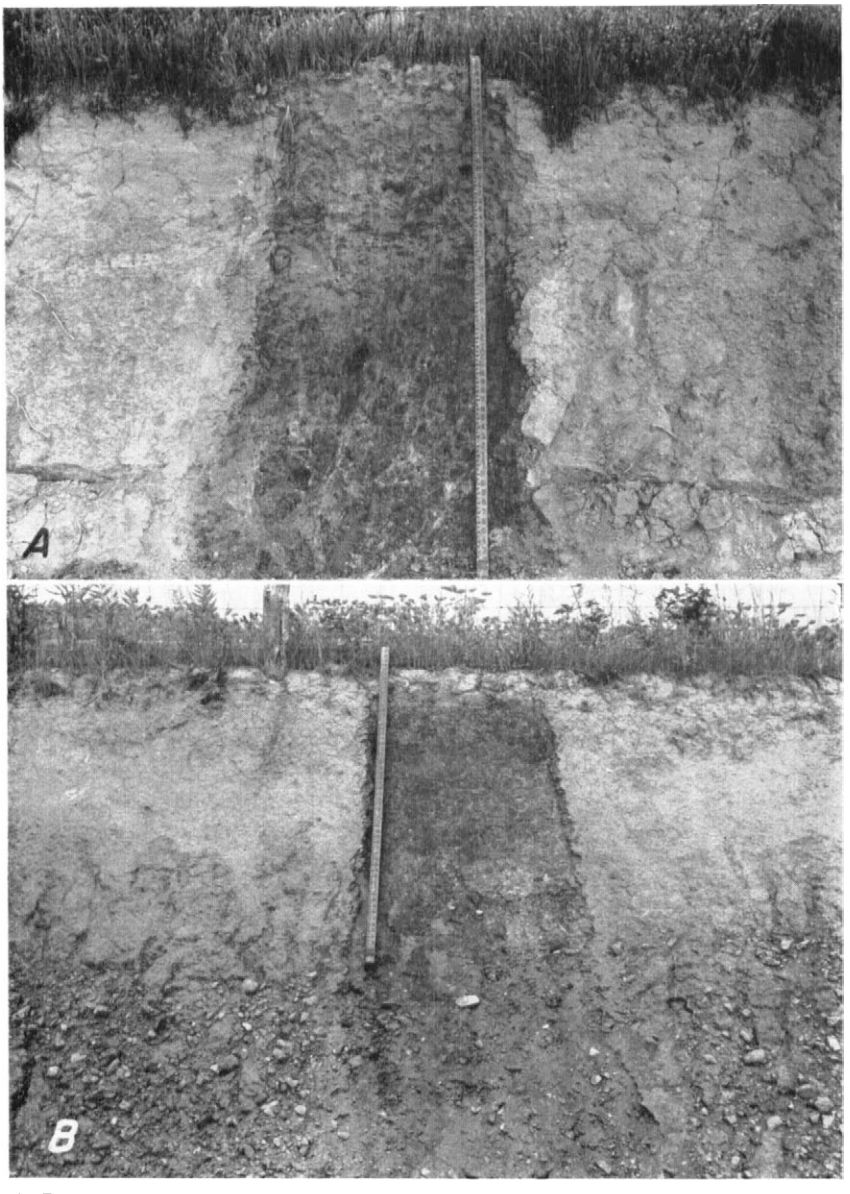


A, Lexington silt loam. The light-colored upper 28 inches is silt or loess, and the dark-colored lower part is red friable sandy Coastal Plain material.

B, Lexington silty clay loam, severely eroded rolling phase, in the foreground. Production is low. In middle background, a good cover of crimson clover on Lexington silt loam, eroded rolling phase.

C, Lexington silty clay loam, severely eroded hilly phase. Small severely gullied patches are marked on the soil map by special gully symbols.



A, Loring silt loam, showing the moderately mottled layer at a depth of about 32 inches. This layer is at a little greater depth than the mottled hardpan of the Grenada soils, and it is not compact.

B, Profile of Memphis silt loam. The silt or loess is about 4 feet thick, friable, and quite free of mottling. The underlying material in most areas is sandy rather than gravelly.

A, Cut-over native forest on Routon silt loam.
B, A heavy deposit of sediment resulting from a break in the terrace in the background. Terraces help control runoff water, but they must be carefully maintained.

A, Memphis soils are productive, but they respond greatly to proper fertilization. Wheat, fertilized and limed, is shown on the left; wheat which has received no treatment is shown on the right.

B, Red clover and other legumes respond greatly to lime and phosphorus on Memphis soils. The clover on the right was treated with lime and phosphorus; that on the left received no lime or phosphorus.

A, Broad, undulating to rolling uplands characterize the Memphis-Lexington-Ruston soil association.

B, Tigrett silt loam in an area of the Brandon-Guin-Lax association.

C, The Lexington (Lexington-Ruston) association consists mostly of undulating to rolling soils, but some like the forested area in the background are hilly. The meadow is on Tigrett silt loam; the cotton and the corn are on Lexington silt loam, eroded rolling phase.

The use suitability of this soil is influenced by its steep slopes and by the agricultural possibilities of associated soils. The soil would be good for crops and pasture, but its hilly relief makes it very likely to erode when cleared. It is moderately easy to work, except that the strong slopes make the use of heavy machinery difficult. The soil is low in lime and organic matter and somewhat deficient in nitrogen, phosphorus, and potassium. This soil can be maintained in a long crop rotation under a high level of management, but a better use is for permanent pasture. Forestry would seem even more desirable for these hilly slopes.

Lexington silt loam, eroded hilly phase (12 to 25 percent slopes) (Lj, 11).—This is a well-drained, brown, silty, moderately eroded upland soil. The parent material from which it developed is a layer of silty windblown material, 2 to 3 feet deep, that accumulated on sandy well-drained Coastal Plain material. The areas, each covering a few acres, are associated principally with areas of Ruston and Memphis soils and with other Lexington soils.

Usually 25 to 75 percent, and sometimes all, of the original surface layer has been carried away by erosion. The present surface layer, very irregular in thickness, is a brown to strong-brown friable silt loam. The subsoil is strong-brown to reddish-brown or yellowish-red friable silty clay loam.

The soil is medium to strongly acid. Most of the organic matter has been lost through erosion or dissipated by tillage. The soil material is permeable to roots, air, and water. It has a moderate water-supplying capacity.

Use and management.—All this soil has been cleared for crops and pasture, but most of it is now idle. The quality and carrying capacity of pastures are generally low. They support a considerable growth consisting of broomsedge and various native grasses, weeds, briers, and brush. The acreage in field crops is very small.

This soil is not good for crops because it has short moderately steep slopes and is extremely erodible. The hilly slopes are too steep for heavy farm machinery, and animal-drawn implements must be used. The soil is moderately easy to work, but moderately difficult to conserve if used for intertilled crops. Good pastures can be established and maintained only if carefully managed. Otherwise, the soil probably should be returned to forest. The soil can be used for crops if a very high level of management is practiced. Such management requires adequate use of amendments, supplementary water control, and rotations that consist mainly of close-growing crops.

Lexington silty clay loam, severely eroded rolling phase (5 to 12 percent slopes) (Lk, 6).—This is a well-drained, brown, severely eroded soil of the uplands. It developed on gently sloping uplands or ridges. The parent material was a mantle of loess, less than 3½ feet thick, deposited over Coastal Plain sand. This is one of the most extensive upland soils and is widely distributed over most of the county.

Surface soil has been removed unevenly from this phase. In some places in a considerable part of each area, parts of the plow layer may be entirely in the original surface layer. More than 75 percent of the

original surface layer is gone, and in places some of the upper subsoil is gone. Considerable mixing of the remains of the old surface layer and the subsoil takes place under cultivation. Shallow gullies are common and some deep gullies cannot be crossed by farm machinery. The present plow layer varies in color and texture and forms a complex pattern of grayish-brown, brown, and strong-brown friable silt loam to silty clay loam. When wet the heavier textured material is somewhat sticky and plastic, but it becomes hard when dry. The subsoil is strong-brown to reddish-brown or yellowish-red friable silty clay loam, 10 to 25 inches thick.

This soil is strongly acid where it has not been limed, and it is low in organic matter and plant nutrients. It allows penetration of roots and circulation of air and moisture. Its absorption of water, however, has been considerably reduced, and it has a low water-supplying capacity.

Use and management.—All of this soil has been cleared and used for general farm crops. Most of it is now either idle or in low-grade volunteer pasture (pl. 6, *B*). Most pastures have thin stands of broomsedge mixed with native weeds and small patches of lespedeza. They produce fair grazing in spring but have a low carrying capacity for the rest of the year. Small areas are used periodically for corn and hay. Yields are low, and after a crop is harvested the soil may be left idle again for several years.

This soil has been so severely injured by erosion that it is poorly suited to either crops or pasture. Supplies of lime, organic matter, and plant nutrients are low. The soil is moderately easy to work, but moderately difficult to conserve and to keep in good tilth. Gullies interfere with the use of heavy farm implements in many areas.

The soil is better suited for pasture than crops. Most of the grasses and legumes common to the county can be grown, but they require fertilizers and high levels of management for good yields. Satisfactory yields of most of the common crops can be obtained if proper rotations, amendments, and supplementary water control measures are used. The soil responds readily to good management, and after 2 or 3 rotation cycles, the effects of the severe erosion are not apparent.

Lexington silty clay loam, severely eroded hilly phase (12 to 25 percent slopes) (LI, 14).—This is a severely eroded well-drained, silty, brown upland soil. It has formed from loess, 2 to 3 feet thick, underlain by pervious Coastal Plain sand.

All or nearly all of the original surface layer is gone. The present surface layer is mostly within the upper subsoil, although in places old surface material is mixed with it. Small gullies have cut into the subsoil layer in many areas. Some deep narrow gullies have penetrated to the underlying sand. Small areas between the gullies still have part of the former surface layer. The present plow layer forms an irregular pattern of grayish-brown, brown, and strong-brown silt loam to silty clay loam. The subsoil is strong-brown to reddish-brown or yellowish-red friable silty clay loam. It is underlain at 16 to 28 inches by red sandy clay or sands of the Coastal Plain formation.

Use and management.—All of this soil has been cleared, but now most of it is idle land or wasteland (pl. 6, *C*). A few acres are sometimes used for pasture, but the growth is a poor-quality mixture of

broomsedge, native grasses, weeds, and brush. The soil has been reduced to low productivity by erosion. It is very low in organic matter, nitrogen, phosphorus, potassium and lime. It has a low water-supplying capacity. The moderately steep relief, short slopes, and gullies make it a difficult soil to work and conserve. It has been damaged severely by erosion and is likely to be further damaged. It is not suitable for cropping. On most farms, it probably should be reforested, although it can be used for pasture if properly managed and fertilized.

Lexington-Ruston soils, rolling phases (5 to 12 percent slopes) (Lm, 5).—This complex consists of two soils—Lexington silt loam, rolling phase, and Ruston fine sandy loam, rolling phase. These two soils are so closely associated that it would not be practical to map them separately. This complex occupies milder slopes than Lexington-Ruston soils, hilly phases. The Lexington soil has formed from a shallow layer of loess, and the Ruston from unconsolidated beds of Coastal Plain sand. The complex is widely distributed over the county in association with Memphis, Lexington, and Ruston soils.

Profile description of Lexington silt loam:

0 to 1 inch, dark-gray or dark grayish-brown very friable silt loam; ½ to 1½ inches thick.
1 to 8 inches, brown or grayish-brown friable heavy silt loam to silty clay loam; 14 to 24 inches thick.
8 to 24 inches, strong-brown to reddish-brown or yellowish-red friable heavy silt loam or silty clay loam; 12 to 24 inches thick.
24 to 28 inches, yellowish-red or reddish-brown friable heavy silt loam or light silty clay loam containing considerable fine sand in places; this is a transitional layer to the material below.
28 inches +, red friable fine sandy clay loam or fine sandy loam overlying stratified beds of sand.

Use and management.—Almost all of this unit is now wooded. Oaks predominate, but there are some hickory, yellow-poplar, and dogwood trees. The stand consists of young and medium-sized trees. They provide firewood, fence posts, and occasionally some rough lumber.

The soils are fairly well suited for common crops. They are easy to work and moderately easy to conserve. When cleared they are likely to erode. The soils are moderate to low in lime, humus, and mineral plant nutrients. Yields of adapted crops, as corn, cotton, small grains, and hay, will be moderate to low without fertilizers. Small areas associated with soils not suited for crops or pasture should be left in forest.

Lexington-Ruston soils, eroded rolling phases (5 to 12 percent slopes) (Ln, 5).—This complex consists of Lexington silt loam, eroded rolling phase, and Ruston fine sandy loam, eroded rolling phase. The two soils are associated in an intricate pattern. The Lexington soil has formed from a thin mantle of loess, and the Ruston from sandy Coastal Plain materials. Small areas of this complex are scattered over the county in association with Memphis, Lexington, and Ruston soils.

This separation is like the complex of Lexington-Ruston soils, rolling phases, but is moderately eroded. From 25 to 75 percent of the original surface layer is gone, and much of each area has subsoil

material within plow depth. Some mixing of surface soil and subsoil material causes variation in color and texture. Small shallow gullies are common, and some are too deep to be completely filled by ordinary tillage.

Profile description of Ruston fine sandy loam:

0 to 1 inch, dark-gray loamy fine sand; high in organic matter.
1 to 6 inches, grayish-brown to pale-brown loose very friable fine sandy loam; 4 to 7 inches thick.
6 to 14 inches pale-brown to yellowish-brown loose very friable fine sandy loam; 6 to 12 inches thick.
14 to 26 inches, red friable fine sandy clay loam; 10 to 24 inches thick.
26 inches +, brownish-red or red light fine sandy clay loam to fine sandy loam that grades into beds of sandy material; streaked yellow and gray in places.

The soils of this complex are medium to very strongly acid, moderate to low in organic matter, and low to moderate in water-supplying capacity. They are permeable to very permeable to roots, air, and water. The Lexington soil is free of gravel, and the little that occurs in Ruston does not interfere with tillage. This complex varies in pattern and dominance of one soil over the other. Texture and depth of the soils vary considerably, as they merge into each other.

These soils vary from medium to very strongly acid. Their supply of organic matter and plant nutrients is low. The soils allow easy penetration of roots, good aeration, and good percolation of water. The water-supplying capacity is moderate for the Lexington soil and low for the Ruston.

Use and Management.—All of this land has been cleared and most of it is now used for crops or pasture. Some is idle and covered with broomsedge, weeds, and briers. Corn, cotton, and lespedeza, the principal crops, yield moderately well if fertilized. The pastures have only fair quality and grazing capacity.

These moderately productive soils are suitable for general farm crops. They are easy to work and moderately easy to conserve and keep in good tilth. They are low in organic matter, lime, and nitrogen and are apparently deficient in phosphorus and potassium. They respond to good management, which includes use of soil amendments. The sloping relief makes the soils susceptible to erosion. Moderately long rotations that include legumes and close-growing crops suit these soils best. Corn, small grains, lespedeza, sweetpotatoes, and soybeans can be grown. Alfalfa, red clover, and similar crops cannot be established and maintained without amendments. Fair to good pastures may be established and maintained, but yields will be low during dry periods. This complex can generally be farmed and managed satisfactorily along with the adjoining soils on ridge crests.

Lexington-Ruston soils, severely eroded rolling phases (5 to 12 percent slopes) (Lo, 6).—This complex consists of severely eroded Lexington and Ruston soils that are associated in an intricate pattern. The Lexington soil has developed from a mantle of silt, less than 3½ feet deep, that overlies Coastal Plain sands. The Ruston soil has developed from the sandy Coastal Plain material. Small areas of this complex are widely distributed over the county in association with Memphis, Lexington, and Ruston soils.

The soils have been altered considerably by erosion. All or nearly

all of the original surface layer has been carried away. Erosion has exposed numerous small patches of the subsoil. Many shallow and deep gullies have been cut. Texture and color of the plow layer vary because of the intermixing of the original surface layer and the subsoil.

The soils of this separation are very low in organic matter and are strongly to very strongly acid. They are permeable to roots, air, and moisture but have a low water-supplying capacity.

Use and management.—All of this complex was once cleared and used for crops and pasture. Now most of the acreage is idle or in unimproved pasture because of severe erosion. A few acres are used for corn, but yields are low. The pasture is mostly broomsedge with some weeds, brush, and briers.

This complex is low in productivity and poorly suited to either crops or pasture. The soils are very low in organic matter, deficient in plant nutrients, and low in water-supplying capacity. They are moderately easy to cultivate but moderately difficult to conserve. Slopes are mild enough for the use of heavy equipment, but gullies may interfere with efficient tillage. Surface runoff is very rapid and internal drainage is medium to rapid.

Under high levels of management, fair pasture can be established and maintained. It is possible to improve the fertility and restore tilth, so that the soils eventually can be used again for crops.

Lexington-Ruston soils, hilly phases (12 to 25 percent slopes) (Lp, 11).—This is a complex in which Lexington silt loam, hilly phase, and Ruston fine sandy loam, hilly phase, are intricately associated. The proportion of each soil in the unit varies from one place to another. The Lexington soil has formed from a thin mantle of loess, and the Ruston from sandy Coastal Plain materials. Both developed on ridge slopes under deciduous forest. In some places, long narrow strips along the upper part of the slope consist entirely of Lexington soils, and the lower slopes are mostly Ruston soils. This complex of soils is widely distributed over the county in association with Memphis, Guin, Lexington, Ruston, Hymon, and Beechy soils.

Profile description of Lexington silt loam:

0 to 1 inch, dark grayish-brown to dark-gray mellow very friable silt loam, high in humus.
1 to 6 inches, brown or grayish-brown mellow silt loam; 4 to 6 inches thick.
6 to 22 inches, strong-brown to reddish-brown or yellowish-red friable heavy silt loam or silty clay loam; 10 to 22 inches thick.
22 to 26 inches, transitional layer of yellowish-red or reddish-brown friable heavy silt loam or light silty clay loam; contains some fine sandy loam; 3 to 5 inches thick.
26 inches +, red friable fine sandy clay loam or fine sandy loam underlain by loose beds of sand.

Profile description of Ruston fine sandy loam:

0 to 1 inch, dark-gray loamy fine sand stained with organic matter.
1 to 5 inches, pale-brown to grayish-brown loose very friable fine sandy loam; 3 to 5 inches thick.
5 to 14 inches, pale-brown to yellowish-brown loose very friable fine sandy loam; 4 to 10 inches thick.
14 to 26 inches, red friable fine sandy clay loam; 10 to 24 inches thick.
26 inches +, brownish-red or red light fine sandy clay loam to fine sandy loam that grades into layers of sand.

The soils of this complex vary from medium to very strongly acid. They are medium to very low in organic matter. The water-supplying capacity varies from low to medium. Air and moisture circulation are good, and the soils are readily permeable to roots. The Lexington soil is free of gritty material and gravel, but in some places gravel occurs in and on the Ruston soil. The texture and depth of layers vary as the soils merge into each other. These variations differ slightly in use and management requirements.

This separation includes some Providence soil and some Orangeburg soil, which is not separately mapped in this county. The Orangeburg is like the Ruston, but has browner surface layers. The Providence soil is like the Lexington, but has a weak siltpan.

Use and management.—All of this land is now wooded. The trees are mostly oaks and hickory, but there is a scattering of yellow-poplar, dogwood, and cedar. The woodlots have been cut over several times. The present stand of small- to medium-sized trees is suitable for crossties, fence posts, or firewood.

This complex is poorly suited to general farming because it is moderately steep and susceptible to severe erosion. Permanent pasture can be maintained on cleared areas if a high level of management is practiced. Probably the most suitable use is forestry.

Lexington-Ruston soils, eroded hilly phases (12 to 25 percent slopes) (Lq, 11).—This complex consists of Lexington silt loam, eroded hilly phase, and Ruston fine sandy loam, eroded hilly phase. The Lexington soil has developed from an accumulation of silt, about 2 to 3 feet thick, and the Ruston, from beds of unconsolidated sand.

This complex has lost 25 to 75 percent of the original surface layers. This erosion varies considerably in each area, and the subsoil is exposed in places. The Ruston soil is more severely eroded than the Lexington.

On some areas of this complex, gullies have cut into the subsoil. The surface layer has a somewhat finer texture where it has been mixed with subsoil material.

The soils vary from medium to very strongly acid. Both are low in organic matter and plant nutrients. The soils are permeable to very permeable to roots, air, and moisture. The water-supplying capacity is low for the Ruston and moderate for the Lexington.

Use and management.—All of this complex has been cleared and used for general farm crops and pasture. A few small areas are now used for hay, but most of the unit is idle land or wasteland. Some is used at times for pasture, but the sod is of poor quality and has a low carrying capacity. Crops produce low average yields.

The soils of this complex have low to moderately low productivity. They are moderately difficult to conserve but moderately easy to work. The slopes are steep enough to interfere with the use of heavy machinery. This land can be used for pasture under a high level of management, but it is better suited to forestry.

Lexington-Ruston soils, severely eroded hilly phases (12 to 25 percent slopes) (Lr, 14).—The Lexington soil of this complex originated from a thin formation of silt, and the Ruston from unconsolidated well-drained sandy material. The complex is widely

distributed over the county. It is closely associated with Memphis and Providence soils and with other Ruston and Lexington soils.

The soils are similar to the hilly phases of the Lexington-Ruston complex but are severely eroded. Most of the surface layer and part of the upper subsoil is gone. Shallow gullies are common, and some deep V-shaped gullies expose the underlying sand. Much of the original surface layers may remain between gullies. The present plow layers vary greatly in color and texture because the subsoil and original surface layer are mixed.

These soils are strongly to very strongly acid and are very low in organic matter and available plant nutrients. They are permeable or very permeable to roots, air, and moisture. The water-supplying capacity of the Lexington soil is moderately low and that of the Ruston is low.

Use and management.—All of this complex has been cleared and used for crops or pasture. Nearly all of it is now idle or abandoned. Only a few acres are cropped, and a few more are used for pasture. Pastures are of low quality and contain mostly broomsedge.

The soils of this complex have been reduced to a very low level of productivity through cropping and erosion. They are difficult to work and conserve because they are moderately steep and highly erodible. They are very low in organic matter and lime and greatly deficient in phosphorus and potassium. Runoff is rapid, and internal drainage is medium. These soils are poor for tilled crops and have a low value for pasture. They probably are best suited to forestry.

Lindside and Lobelville silt loams (0 to 2 percent slopes) (Ls, 2).—This unit consists of imperfectly drained Lindside and Lobelville soils, which differ chiefly in kind of parent material and in reaction. Both are forming from mixed recent alluvium. The Lindside soil material is mixed but came mostly from high-grade limestone. The Lobelville soil material is chiefly from cherty limestone but contains some loess. This unit occupies nearly level or slightly depressed areas on the low bottom lands.

The areas of this unit mapped along the Tennessee River bottoms consist entirely of Lindside silt loam, and those along tributary streams, largely in the Bodine-Mountview-Paden soil association, consist entirely of Lobelville silt loam. The two rarely occur in the same field. The Lindside soil is associated with the Melvin, Huntington, and Robertsville soils, and the Lobelville with the Robertsville, Taft, and Paden soils. Most of this unit is now flooded by Kentucky Reservoir. Almost all of the Lindside soil is flooded. The original vegetation was water-tolerant hardwood trees.

Profile description of Lindside silt loam:

0 to 14 inches, brown to grayish-brown friable silt loam; 10 to 18 inches thick.
14 to 24 inches, brownish-gray friable heavy silt loam streaked with gray and strong-brown material; 8 to 20 inches thick.
24 inches +, mottled gray, yellow, and brown moderately friable heavy silt loam to silty clay loam; 5 feet or more thick.

Profile description of Lobelville silt loam:

0 to 15 inches, brownish-gray to grayish-brown mellow very friable silt loam; 8 to 18 inches thick.

15 to 25 inches, brownish-gray to light yellowish-brown friable silt loam or heavy silt loam splotched with gray and strong brown; 8 to 15 inches thick.

25 inches +, gray or light-gray friable silt loam with an irregular mottling of yellow and strong brown; 2 to 10 feet or more thick.

The Lindside soil is medium to slightly acid, and the Lobelville strongly to very strongly acid. They are moderate to low in organic matter and have a very high water-holding capacity. Both soils are permeable to roots, air, and water at all depths, but the lower layers are poorly aerated most of the time because they are saturated with water. The roots of plants stay mostly within the upper part of the soils. Few roots penetrate into the mottled zone. Soft and semihard concretions are scattered in the upper layers, but are more numerous in the lower layers. The soils are free of gravel and stones.

Some small areas of silty clay loam and some areas that are more poorly drained and somewhat lighter in color are included in this unit.

Use and management.—Only about 15 percent of this unit is now above the high water level of Kentucky Reservoir. The flooded areas were formerly used rather intensively for corn. The land above the lake level is owned by the Tennessee Valley Authority and used as a wildlife refuge.

These soils are suited to pasture and some crops. Their suitability is limited by imperfect drainage and periodic flooding. The soils are moderately good producers of corn, sorghum, soybeans, and annual hay. They are moderately easy to work and conserve. Artificial drainage would increase average yields and broaden the suitability for crops.

Loring silt loam, level phase (0 to 2 percent slopes) (Lt, 4).—This is a moderately well drained to well drained brown, silty soil on nearly level sites in the uplands. It has a weak siltpan. Its parent material was deep loess. It occurs in small areas and is associated with Center, Calloway, and Memphis soils, and with other Loring soils. It is in the northern and western parts of the county.

This soil is like Loring silt loam, undulating phase, but is nearly level, is somewhat less well drained, and has slightly thicker horizons. The surface layer is a brown or grayish-brown very friable silt loam. The subsoil is a yellowish-brown to strong-brown friable silty clay loam. At a depth of about 30 inches is a weak moderately compact siltpan.

The soil ranges from medium to strongly acid, unless lime has been applied recently. It is moderately low in organic matter and deficient in plant nutrients, but has a high water-supplying capacity. Runoff is very slow because of the nearly level relief. Internal drainage is medium. The upper layers of the soil are readily permeable to roots, water, and air. However, aeration in the lower layers is somewhat restricted, and few roots penetrate the mottled zone.

Use and management.—All of the soil has been cleared, and most of it is used for general farm crops. Corn, cotton, wheat, and lespedeza are the principal crops. Yields above the average for the county are often harvested. The soils are usually farmed along with associated soils, and similar management is applied to all.

This soil is well suited to many kinds of crops, including alfalfa and red clover. It is slightly less suitable for perennial and winter annual

crops than the undulating phase of Loring silt loam because it has very slow runoff. It is one of the more highly productive soils and is very easy to work, conserve, and keep in good tilth. Because it is nearly level, the soil loses little material through erosion. Moisture supplies throughout the growing season are generally sufficient for all common crops. The soil is moderately low in humus and has a fair supply of plant nutrients. It responds readily to lime, manure, and fertilizer. It is well suited to intensive use if short crop rotations are followed. Productivity can be kept at a high level by proper management.

Loring silt loam, undulating phase (2 to 5 percent slopes) (Lu, 4).—This is a moderately well drained to well drained brown, silty soil of the uplands. It has an incipient siltpan. It has formed from a deposit of windblown silt, 3½ feet or more in depth. The native vegetation is deciduous forest. The soil is like the Memphis soils except for the compaction, color, and mottling of its lower subsoil (pl. 7, *A*). The areas—small and widely distributed over the western half of the county—are associated with the Memphis, Center, and Routon soils, and with other Loring soils.

Profile description:

0 to 1 inch, dark-gray or dark grayish-brown very friable mellow silt loam.
1 to 7 inches, brown or grayish-brown very friable mellow silt loam; moderate medium crumb structure; 4 to 7 inches thick.
7 to 18 inches, yellowish-brown friable silt loam to light silty clay loam; weak fine blocky structure; 8 to 14 inches thick.
18 to 30 inches, yellowish-brown to strong-brown friable silty clay loam; upper part has reddish cast when moist; moderate medium blocky structure; 10 to 14 inches thick.
30 to 42 inches, slightly to moderately compact yellowish-brown silt loam or silty clay loam splotched and streaked with gray; weak medium blocky structure; contains a few dark concretions; 10 to 14 inches thick.
42 to 52 inches, yellowish-brown to brown moderately compact heavy silt loam or silty clay loam that has many large distinct splotchings of gray; contains some dark concretions; 8 to 14 inches thick.
52 inches +, moderately firm yellowish-brown to strong-brown heavy silt loam containing thin seams of gray and strong-brown materials; extends to depths of 5 to 6 feet; underlain by sandy Coastal Plain material.

The soil is medium to strongly acid and has a moderately low supply of organic matter. It has a high water-supplying capacity. The layers above the compact zone are readily permeable to roots and allow circulation of air and moisture. Slight local changes in underdrainage result in minor differences in compaction, number of mottles, and thickness of subsoil layers.

Use and management.—All of this soil is wooded chiefly with oak and hickory. Nearly all of the trees suitable for sawtimber have been cut. The moderately good stand of medium-sized trees has an understory of young saplings. In those areas that are grazed occasionally, the new growth may be destroyed.

This soil is highly productive and very easy to work and to conserve. Usually there is enough moisture for normal growth of crops. The supplies of lime, organic matter, and nitrogen are low, and there is some deficiency of phosphorus and potassium.

When cleared, this soil is well suited for nearly all general farm crops commonly grown in the region. It can be farmed intensively if short crop rotations are used. Productivity can be maintained

by using a high level of management. It may be practical to continue to use most of the areas now wooded for forest products.

Loring silt loam, eroded undulating phase (2 to 5 percent slopes) (Lv, 4).—This is a moderately well drained to well drained, brown, silty upland soil that has a weak siltpan. It has formed from deep loess. The cover was deciduous forest. This is an important farming soil in the northern and western parts of the county. It is closely associated with the Center, Calloway, Grenada, Memphis, Routon, and Ruston soils.

From 25 to 75 percent of the original surface layer has been removed by erosion. Small patches that have been eroded to the subsoil are conspicuous. The plow layer varies in color and texture because of mixing of the surface soil and subsoil. The mixing makes little difference in management, except in the more severely eroded places. The present surface layer consists of grayish-brown, brown, or strong-brown friable silt loam. The subsoil, a yellowish-brown to strong-brown friable silty clay loam, is underlain by a slightly to moderately compact layer at depths between 30 and 40 inches.

The soil is medium to strongly acid, low in organic matter, and moderate in water-supplying capacity. The upper layers of the soil are readily permeable to roots, water, and air, but the compact lower subsoil is less permeable. Surface runoff and internal drainage are medium.

Use and management.—All of this soil is cleared. Most of it is used for general farm crops, principally corn, cotton, tobacco, and lespedeza. Yields are moderate to moderately high under common management.

The soil is well suited for many kinds of farm crops, including corn, cotton, sweetpotatoes, tobacco, lespedeza, and whiteclover. Fertilization is necessary for good yields of most crops. Alfalfa and red clover can be grown only when fertilized.

The soil has high potential productivity and is suitable for intensive cropping. Special surface drainage and erosion control are usually not necessary if good management is used. The mild relief allows efficient use of all types of farm implements. In spring the soil warms up early. The supplies of lime, organic matter, and nitrogen are low, and the soil is deficient in phosphorus and potassium. Many fields consist entirely of this soil; therefore uniform management practices can be applied. A high level of productivity and a varied agriculture can be established and maintained on this soil if management is good.

Loring silt loam, rolling phase (5 to 12 percent slopes) (Lw, 5).—This is a moderately well drained to well drained, brown, silty soil of the uplands. It always has a weak siltpan. It has developed from the deeper deposits of loess. It is associated with Center, Calloway, and Ruston soils and with other Loring soils. The forest cover is mixed hardwoods.

The surface layer is a brown or grayish-brown very friable silt loam. The subsoil consists of yellowish-brown to strong-brown friable silty clay loam underlain at depths between 30 and 40 inches by a weak siltpan.

The soil is medium to strongly acid, low in organic matter, and

moderate in water-supplying capacity. Runoff and internal drainage are both medium. The soil is permeable to air, water, and roots, except in the compact layer, where aeration and percolation of water are somewhat impeded.

Use and management.—All of this soil is wooded chiefly with oak and hickory. The trees vary in size and age, but all the best timber has been cut.

This soil is highly productive and will produce most of the farm crops common in this area. When cultivated, it is easy to work and moderately easy to conserve and keep in good tilth. The slopes are not steep enough to interfere seriously with the use of heavy machinery, but they do make the soil more likely to erode when cleared. The soil has a fair supply of plant nutrients but is low in lime, organic matter, and nitrogen. The soil responds to amendments. It can be farmed intensively and kept highly productive.

Loring silt loam, eroded rolling phase (5 to 12 percent slopes) (Lx, 5).—This is a brown moderately eroded silty soil on upland slopes. It is moderately well drained to well drained and has an incipient siltpan. The soil developed under hardwood forest from a thick deposit of loess. It occurs in the northern and western parts of the county. It is associated with Memphis, Lexington, and Briensburg soils, and with other Loring soils.

Erosion has removed 25 to 75 percent of the original surface soil. In small spots all the surface soil is gone and the subsoil is exposed. Parts of the present plow layer consist of the remains of the old surface layer mixed with subsoil material. The plow layer is a grayish-brown, brown, or strong-brown friable silt loam. The subsoil a yellowish-brown to strong-brown friable silty clay loam. It is underlain by a slightly to moderately compact layer at depths between 30 and 40 inches.

This soil is medium to strongly acid unless recently limed. It is low in organic matter, moderately low in plant nutrients, and moderate in water-supplying capacity. The soil material above the siltpan permits the growth of roots and good circulation of air and moisture. The siltpan checks the growth of alfalfa and other deep-rooted plants.

Use and management.—All of this unit is cleared and, except for a few acres in pasture and some that are idle, is cultivated with adjoining soils. Corn, cotton, small grains, and hay are the main crops. Lespedeza is the principal hay crop, but a few farmers grow red clover or a clover-grass mixture for hay.

This is a moderately productive soil suitable for many farm crops. It is easy to work and moderately easy to conserve and to keep in good tilth. The relief is mild enough for cultivation with heavy machinery. The soil responds well to fertilizer, lime, and manure. Moderately long rotations that include legumes and grasses are well suited. Corn, small grains, cotton, tobacco, red clover, alfalfa, lespedeza, soybeans, fruits, and vegetables can be grown successfully.

Loring silty clay loam, severely eroded rolling phase (5 to 12 percent slopes) (Ly, 6).—This is a brown moderately well drained to well drained weak siltpan soil on gently sloping upland areas. It developed in a deep accumulation of loess. It is associated with Memphis, Center, Routon, and Briensburg soils and with other Loring

soils throughout the western half of the county. The native growth was mixed hardwood forest.

Severe erosion has removed all or nearly all of the original surface layer and in places a part of the subsoil. Irregular colors and textures in the present surface layer are caused by mixing of the remains of the surface soil with subsoil material. The surface layer now consists of a grayish-brown or brown to yellowish-brown friable silty clay loam or silt loam. This layer overlies a subsoil of yellowish-brown or strong-brown friable silty clay loam. The subsoil is underlain by a slightly to moderately compact siltpan. Shallow gullies are common. Some gullies have cut into the underlying Coastal Plain material.

The soil is strongly to very strongly acid, very low in organic matter, and low in water-supplying capacity. The upper layers are permeable to roots, air, and moisture, but circulation of air and water is slightly impeded by the compact layer in the lower subsoil.

Use and management.—All of this soil has been cleared and used intensively for crops and pasture. Now, most of it is idle or in unimproved pasture. A few areas that are less severely eroded are used at intervals for crops, but yields are low. Broomsedge, weeds, briers, and brush grow on the soil, but many small patches have almost no vegetation.

Because it has been impoverished by cropping and severely injured by erosion, this soil is now poorly suited to crops. It is fairly well suited to pasture. The soil is moderately easy to work, but it is moderately difficult to conserve and to maintain in good tilth. The water-holding capacity has been lowered considerably, and much of the rainfall rapidly flows away over the surface. At times, the soil is very dry and plants have too little water. Nearly all of the organic matter is gone, and reserves of plant nutrients are very low. The general relief does not interfere with the use of most types of farm machinery, but the gullies may.

Management is exacting, and the suitability of the soil for farming is greatly restricted. Cultivated crops grow poorly and yield little. Fair stands of some pasture crops can be maintained if they are managed at a high level. Eventually, if pastures are well managed, the soil will improve enough to permit its use for crops.

Made land (Ma, 15).—This unit is comprised of areas that have been covered to variable depths by material from nearby clay or gravel pits or from excavations for building sites or for road construction material. These areas have no value for agriculture.

Melvin and Beechy silt loams (0 to 2 percent slopes) (Mc, 13).—This unit consists of undifferentiated, gray, poorly drained soils on low flood plains. These soils are similar in many features but differ in their parent material. The Melvin soil is forming in mixed alluvium washed from uplands where material from limestone predominated. The Beechy soil is developing from sediments washed from uplands covered by loess and Coastal Plain materials. These soils occur typically in long narrow depressions or sloughlike areas on flood bottoms of the Tennessee and Big Sandy Rivers. They are associated with Lindside, Egam, Taft, Huntington, Robertsville, and

Lobelville soils. The native vegetation is mostly water-tolerant oaks, sweetgum, blackgum, beech, ash, cypress, willow, and sycamore. Most of this unit is now flooded by Kentucky Reservoir.

Profile description of Melvin silt loam:

0 to 4 inches, gray or brownish-gray smooth friable silt loam or light silty clay loam specked with strong brown; 2 to 6 inches thick.
4 to 18 inches, gray or light-gray friable silt loam to silty clay loam containing a variable number of strong-brown mottles; 10 to 20 inches thick.
18 inches +, light-gray or gray moderately firm silty clay loam interbedded in places with silt; 2 to 10 feet or more thick.

Profile description of Beechy silt loam:

0 to 8 inches, light brownish-gray or gray very friable silt loam splotched with light gray and strong brown; 0 to 10 inches thick.
8 to 32 inches, light-gray or gray friable silt loam that has a few strong-brown mottles; 10 to 30 inches thick.
32 inches +, light-gray friable silt loam streaked with strong brown; interbedded irregularly with layers of clay, silty clay loam, and sandy material; 2 to 10 feet or more thick.

The Melvin soil is medium to strongly acid, and the Beechy is strongly to very strongly acid. Both are low in organic matter. The soil materials are permeable. However, the water table is at or close to the surface during rainy seasons, and this hinders aeration and root development. Plant roots are concentrated in the upper few inches of soil. Surface runoff is very slow or ponded. Most of this mapping unit is overflowed periodically. Soft and hard dark-colored concretions occur throughout the soils, which are free of gravel and stones in most places.

Use and management.—Only a few acres of this unit are now above the high water level of Kentucky Reservoir, and all are in the wildlife preserve. Formerly, much of this land was in woods. A small part of the cleared land was used for corn, hay, sorghum, or pasture. Crops produced low yields and at times were a complete failure.

Because they are poorly drained, the soils above the reservoir water level are poorly suited to row crops but are fair for pasture and some hay crops. Tall meadow fescue, redtop, white and alsike clovers, and lespedeza grow fairly well. Sorghum and soybeans, do reasonably well.

The soils are permeable throughout and could be drained. If they were drained, they might become moderately productive of corn, sorghum, and hay. Susceptibility to flooding, however, would still limit their suitability for agriculture.

Memphis silt loam, level phase (0 to 2 percent slopes) (Me, 4).—This is a well-drained, brown, silty soil on nearly level uplands. It has formed from a thick deposit of loess, under a forest of mixed hardwoods. It is associated with Loring, Center, and Lexington soils and with other Memphis soils. Areas of this soil are generally surrounded by Memphis silt loam, eroded undulating phase.

Profile description:

0 to 8 inches, brown very friable mellow silt loam; 6 to 10 inches thick.
8 to 14 inches, brown to strong-brown friable mellow silt loam to heavy silt loam; 4 to 8 inches thick.
14 to 30 inches, yellowish-red to reddish-brown friable silty clay loam; 12 to 18 inches thick.

30 to 42 inches, yellowish-red to yellowish-brown friable silty clay loam; 12 to 18 inches thick.
42 inches +, strong-brown to yellowish-red friable heavy silt loam or silt loam; at depths of 3½ to 7 feet underlain by red sandy Coastal Plain material.

The soil is medium to strongly acid where it has not been limed. It is moderately low in organic matter and has a high water-supplying capacity. The soil is very permeable to plant roots, air, and moisture, It is practically free of gravel or gritty material.

Use and management.—Nearly all of the forest has been cleared away. Most of the soil is used for general farm crops, but some is in pasture. About 5 percent is idle, mostly where soils around it are idle. Corn, cotton, small grains, and lespedeza hay are most commonly grown, but alfalfa, crimson clover, red clover (pl. 4, *C*), white-clover, soybeans, sweetpotatoes, fruits, and vegetables are also produced.

The soil is very well suited for many kinds of field crops, vegetables, and fruits. It is very easy to work and conserve. Tilth is very good and little soil material is lost through erosion. Surface runoff is slow and internal drainage is medium. Moisture is normally adequate for plant growth.

This is one of the most highly productive upland soils of the county. It is somewhat deficient in organic matter and plant nutrients, but it readily responds to amendments. Amendments are essential for success with alfalfa and for continued high yields of most crops. Short rotations are well suited, and intensive farming is practical at high levels of management. All crops suitable for the county can be grown successfully.

Memphis silt loam, undulating phase (2 to 5 percent slopes) (Mf, 4).—This is a well-drained, brown, silty soil of the uplands. It has developed from a layer of loess 3½ feet or more (pl. 7, *B*) in thickness. The underlying material is chiefly sand of the Holly Springs geologic formation. The soil occurs with the related Loring, Center, and Routon soils, from which it differs chiefly in drainage. It is widely distributed over the western half of the county in the Memphis-Lexington-Ruston and the Memphis-Loring-Lexington soil associations. The forest is mixed hardwoods.

Profile description:

0 to 1 inch, dark-gray to dark grayish-brown silt loam; high in organic matter.
1 to 8 inches, brown very friable mellow silt loam; moderate medium crumb structure; 6 to 8 inches thick.
8 to 12 inches, brown to strong-brown friable mellow silt loam; moderate medium crumb structure; 3 to 6 inches thick.
12 to 26 inches, reddish-brown or yellowish-red friable silty clay loam; weak to moderate medium blocky structure; 12 to 16 inches thick.
26 to 42 inches, yellowish-brown to yellowish-red friable silty clay loam; weak medium blocky structure; 14 to 30 inches thick.
42 inches +, strong-brown to yellowish-red friable heavy silt loam or silt loam; at depths of 3½ to 7 feet is red, sandy Coastal Plain material.

The soil ranges from medium to strongly acid. It is moderately low in organic matter but has a high water-supplying capacity. It is readily permeable to water, air, and roots. Most areas are underlain by unconsolidated permeable sandy clay or sandy material, but a

few areas in the northwestern part of the county developed over stratified beds of gravel.

Use and management.—Almost all of this soil is in woods. Most of the mature trees and sawtimber have been removed. These areas now support a moderately good stand of medium-sized trees, mostly oak and hickory, and some yellow-poplar.

This highly productive soil is easy to work and to conserve. It usually occupies narrow ridgetops or the terminal ends of small ridge spurs next to steep or hilly land. Some small and inconveniently located areas cannot be used effectively. Larger areas, if cleared, are well suited to all the general crops grown in this region.

Memphis silt loam, eroded undulating phase (2 to 5 percent slopes) (Mg, 4).—This is a well-drained, brown, silty soil of the uplands. It has formed from a moderately deep silt mantle and occurs in the western half of the county. Large areas occur also south of Buchanan and near Elkhorn and Manleyville. This is the most extensive soil in the county. It is associated chiefly with Lexington and Ruston soils and with other Memphis soils.

Most of the soil has lost 25 to 75 percent of its original surface layer through erosion. In many areas, small patches of the subsoil are exposed. The mixing of surface soil with subsoil during cultivation has caused slight color variations. The surface layer now consists of brown or strong-brown friable silt loam; the subsoil is reddish-brown or yellowish-red friable silty clay loam.

The soil is medium to strongly acid when not limed. It is moderately low in organic matter and has a high water-supplying capacity. It allows easy penetration of roots, air, and moisture.

Use and management.—This soil has been cleared, and about 90 percent is cultivated. About 80 percent is used for corn, cotton, small grains, and hay. Sweetpotatoes, soybeans, alfalfa, crimson clover, whiteclover, vegetables, and other crops occupy about 10 percent of the farmed land. Idle fields are covered with broomsedge, weeds, brush, and native grasses.

This is one of the most important agricultural soils of the county because it covers a large area, responds to good management, and is suited to many kinds of crops. It will produce better than average yields of all the general crops. The soil is very easy to cultivate, moderately easy to conserve, and very easy to keep in good tilth. Surface runoff and internal drainage are medium. There is usually enough moisture for normal plant growth. The soil drains and warms up in time for early field work in spring. It is moderately low in organic matter and lime and apparently has moderate supplies of phosphorus and potassium. The soil responds to amendments, and crop yields can be improved by proper management. Short intensive crop rotations can be used successfully.

Many fields consist entirely of this one soil. In other places this soil is next to or among soils of similar fertility. This makes management easier. Alfalfa, red clover, and other legumes do well if lime and phosphorus are applied. Corn, cotton (pl. 1, *A*), tobacco, sweetpotatoes, oats, wheat, barley, soybeans, lespedeza, and grass hay can be grown successfully. Garden vegetables, small fruits, and tree fruits also are well suited.

In general, areas dominated by this soil support a prosperous agriculture. Many farms on this soil are equipped with labor-saving machines and good dwellings and barns.

Memphis silt loam, rolling phase (5 to 12 percent slopes) (Mh, 5).—This is a well-drained, brown, silty soil on sloping uplands. It is like the undulating phase of Memphis silt loam but has stronger slopes, and, in places, its layers may be slightly thinner. The few small widely distributed areas of this soil are associated with Lexington and Ruston soils and with other Memphis soils.

The soil is medium to strongly acid, moderately low in organic matter, and high in water-supplying capacity. All layers are readily permeable to roots, air, and moisture. It contains no gravel or gritty material.

Use and management.—This soil is in an oak-and-hickory forest that includes some yellow-poplar, maple, dogwood, and sweetgum. The large trees have been cut out for sawtimber, and the present stand is mostly small to medium sized. Cull trees are used for firewood or fence posts.

This soil is well suited to nearly all crops common in the county. Compared to other upland soils in this survey, it is high in fertility Because of the forest cover, erosion has been very slight or negligible. Surface runoff is medium, and considerable moisture is absorbed by the soil. Internal drainage is medium.

The soil is not well suited to intensive use for intertilled crops because cleared areas are susceptible to erosion. It is easy to work and moderately easy to conserve if cultivated. Moisture conditions are favorable for plant growth.

Memphis silt loam, eroded rolling phase (5 to 12 percent slopes) (Mi, 5).—This is a brown, well-drained, silty soil on sloping uplands. The parent material is a moderately thick layer of loess. The original surface layer has been noticeably changed by erosion. From 25 to 75 percent of the old surface layer has been removed from a considerable part of the soil. Mixing of the original surface soil and subsurface layer has caused some variations in color and texture of the present plow layer. This plow layer consists of brown or strong-brown friable silt loam. The subsoil is reddish-brown or yellowish-red friable silty clay loam. The subsoil is exposed in small more severely eroded spots. Small, shallow gullies are numerous in some areas.

This is a medium to strongly acid soil, unless recently limed. It is low in organic matter. The soil is permeable to roots, air, and moisture and has a moderate water-supplying capacity.

Use and management.—All of this soil has been cleared, and about 85 percent is now used for general crops and pasture. Corn, cotton, small grains, and hay are the principal crops. Many kinds of crops are grown, but not in any systematic rotation designed to improve the soil. A few acres are included in large idle fields consisting mostly of other soils. These fields are covered with broomsedge, weeds, briers, and brush. The cropped areas are managed in the same way as those adjoining areas that consist of other soils.

Memphis silt loam, eroded rolling phase, is moderately productive, responds to good management, and is well suited to general farm

crops. Good yields can be maintained by using a well-managed rotation that includes legumes and cover crops. The soil is easy to work, easy to keep in good tilth, and moderately easy to conserve. Slopes are mild and regular enough for the effective use of heavy machinery. Runoff and internal drainage are medium. Moisture for crops is generally adequate for the entire growing season. Corn, cotton, tobacco, small grains, soybeans, lespedeza, clover, alfalfa, sweetpotatoes, fruits, and vegetables are well suited to the soil.

Memphis silty clay loam, severely eroded rolling phase (5 to 12 percent slopes) (MI, 6).—In origin, development, relief, and general physical features, this soil is similar to Memphis silt loam, eroded rolling phase. It has lost a greater amount of soil material by erosion. It is associated with Loring, Lexington, and Briensburg soils, and with other Memphis soils. It occurs chiefly in the western part of the county.

In a considerable part of each area, practically all, or all of the original surface layer has been carried away by erosion. The many shallow gullies can be crossed by light farm implements, but the deep V-shaped gullies present in many areas cannot. Small areas between the gullies still have some of the original surface soil. The present surface layer is irregular in color and texture because it is a mixture of subsoil material with remains of the original surface layer. The present surface layer consists of brown, strong-brown, and yellowish-red friable silty clay loam or silt loam. The subsoil is reddish-brown to yellowish-red friable silty clay loam.

The soil is strongly to very strongly acid, very low in organic matter, and deficient in plant nutrients. It is permeable to roots, air, and moisture. It is free of gravel and gritty material. The water-supplying capacity is low.

Use and management.—All of this soil has been cleared and used for crops or pasture, but most of it is now idle or in unimproved pasture.

The soil is poorly suited to crops and pasture. It is moderately easy to work but moderately difficult to conserve and to keep in good tilth. Slopes are mild enough for use of heavy farm implements, but some of the gullies interfere with efficient operation. The soil is very low in organic matter, lime, and nitrogen and deficient in potassium and phosphorus. Erosion has so lowered the absorptive capacity of the soil that most of the rainfall rapidly flows away over the surface. The soil does not supply enough moisture for crops during dry periods.

This soil is not now suitable for a short rotation that includes a row crop. Cultivated crops grow poorly and produce low yields. Fair to good pastures can be established and maintained if exacting management is practiced. The soil gradually improves if pasture is well managed, and ultimately becomes suitable for row crops. If this soil is used for crops, it requires a long rotation consisting mainly of close-growing crops, addition of plant nutrients, and supplementary water-control practices.

Mines, pits, and dumps (Mp, 15).—This is a miscellaneous unit designating any openings or excavations from which various kinds of materials have been removed. It includes pits of variable depths

where gravel has been removed for road construction (pl. 2, *B*). These gravel pits are mostly in the eastern part of the county among Brandon and Guin soils. Many pits scattered in the central and western parts of the county have been made by stripping away soil layers and geologic material in order to mine deep underlaying strata of clay. The pits and mines and the dumps of waste material taken from them have no agricultural value. Trees could be established on some areas.

Mountview silt loam, rolling shallow phase (5 to 12 percent slopes) (Ms, 5).—This is a well-drained yellowish-brown silty upland soil on ridge crests or slopes. It has formed from a mantle of loess, 10 to 20 inches thick, that is underlain by cherty limestone residuum. This soil is associated with Bodine, Paden, and Freeland soils in the extreme eastern part of the county. It is chiefly in the Bodine-Mountview-Paden association. The forest cover is mixed hardwoods.

Profile description:

0 to 6 inches, pale-brown to grayish-brown mellow very friable silt loam; has a thin surface layer stained dark brownish gray by organic matter; 4 to 6 inches thick.

6 to 16 inches, yellowish-brown or brownish-yellow friable heavy silt loam or silty clay loam slightly splotched with gray in the lower part; weak to moderate medium blocky structure; 10 to 15 inches thick.

16 to 48 inches +, brownish-yellow to reddish-brown firm to friable very cherty silty clay loam streaked variably with gray and yellow.

The soil is strongly to very strongly acid and is low in organic matter and plant nutrients. It is permeable to roots, air, and moisture. The water-supplying capacity is moderate. In places a few chert fragments are scattered over and through the soil. The depth of the soil varies. A few acres on lower slopes have cherty materials at depths of 30 to 35 inches. Many areas, generally those on points of ridges or at the break in slope, include as much as 15 to 25 percent of cherty soil.

Use and management.—All of this soil is wooded, chiefly with oak and hickory. The timber grows slowly and yields little. Many trees are of poor quality. All of this land is being developed as a game reserve.

The soil is fair for general farm crops. It is moderately fertile and easy to work, but moderately difficult to conserve. Most of it is in long, narrow areas isolated by steep Bodine soils. Cleared areas would be suitable for such crops as corn, small grains, lespedeza, tobacco, and hay, but yields would be low if amendments were not applied. As a game reserve, this soil probably will be kept in forest.

Mountview silt loam, eroded rolling shallow phase (5 to 12 percent slopes) (Mt, 5).—This is a well-drained yellowish-brown soil on uplands. It has been moderately changed by erosion. It was derived from a very thin layer of loess and underlying cherty limestone material. This soil is associated with Paden and Bodine soils in the extreme eastern part of the county.

A substantial part of the original surface layer has been carried away by erosion. The depth of the remaining surface layer varies. Exposed patches of subsoil are common. The present surface layer is pale-brown to yellowish-brown friable silt loam. The subsoil is yellowish-brown or brownish-yellow friable heavy silt loam or silty

clay loam. The subsoil overlies material weathered from the underlying cherty limestone.

The soil is strongly to very strongly acid and low in organic matter and mineral plant nutrients. It is permeable to roots, air, and moisture but has a low water-supplying capacity. A few chert fragments are distributed on the surface and in the soil layers, but they do not hinder tillage.

Use and management.—All of this soil has been cleared and used for crops, but it is now a game preserve. A cover of broomsedge, weeds, briers, and brush is growing up on most of the areas.

This moderately productive soil is suitable for general farm crops. It is easy to work but moderately difficult to conserve. Corn, small grains, soybeans, and hay can be grown, but yields are only moderate even with fertilizers. Successful stands and yields of alfalfa and red clover cannot be obtained without amendments.

This soil is not suitable for intensive use and short crop rotations because it has been damaged by erosion and is very likely to erode further. Fair to good pastures can be established and maintained by using fertilizer, but yields will be low during dry seasons.

Mountview silt loam, hilly shallow phase (12 to 25 percent slopes) (Mv, 14).—This is a well-drained yellowish-brown silty soil on upland slopes. It was derived from a very thin layer of loess and the underlying cherty limestone materials. The soil has a grayish-brown to pale-brown mellow very friable silt loam surface soil. The subsoil is a yellowish-brown or brownish-yellow friable heavy silt loam to silty clay loam. Cherty silty clay loam underlies this layer at shallow depths.

The soil is strongly to very strongly acid, is low in organic matter, and has a low water-supplying capacity. It is permeable to roots, air, and water. Surface runoff is rapid and internal drainage is medium. In places, chert fragments may be present in the surface layer but they do not hinder cultivation. A few acres of moderately eroded soil are included in this unit. Such areas have a thinner surface layer and are somewhat less fertile.

Use and management.—Nearly all this soil is in hardwood forest consisting of oak and hickory. Most of the larger trees have been cut, and now small- to medium-sized trees of low quality make up most of the stand. The timber grows slowly. All of this soil is now in the wildlife reserve.

The soil is difficult to conserve. It is poorly suited to crops that need tillage, chiefly because it is strongly sloping and likely to erode if cleared. It is moderately easy to work with light equipment. It is not naturally productive of pasture, but fair to good pastures can be established and maintained by using high levels of management. Usually, however, it is isolated by steep Bodine soils and is probably best left in forest.

Paden silt loam, eroded undulating phase (2 to 5 percent slopes) (Pa, 7).—This is a moderately well drained siltpan soil on the older, higher stream terraces. The parent material is a thin layer of windblown silt over old mixed alluvium that washed from uplands underlain by limestone and other rocks. The native forest was mixed hardwoods, mainly oaks and hickories. The soil is only in the north-

eastern part of the county between the Big Sandy and the Tennessee Rivers. It is associated with Bodine, Mountview, Guin, and Brandon soils, and with other Paden soils.

Profile description:

0 to 7 inches, grayish-brown, pale-brown, or yellowish-brown friable smooth silt loam; weak medium crumb structure; 4 to 8 inches thick.
7 to 24 inches, brownish-yellow or yellowish-brown friable heavy silt loam loam or silty clay loam mottled yellow and gray in the lower part; weak to moderate medium blocky structure; 14 to 22 inches thick.
24 to 40 inches, siltpan of compact silty clay loam or silt loam distinctly mottled with gray, yellow, and brown; 10 to 20 inches thick.
40 inches+, moderately friable heavy silt loam or silty clay loam highly mottled with gray, red, and strong brown; 2 to 6 feet thick or more.

The soil is strongly to very strongly acid and low in organic matter and plant nutrients. The water-supplying capacity is moderate. Moisture and air circulate freely in the upper layers, but the siltpan is very slowly pervious to water. Plants root in the upper soil layers; few roots penetrate the siltpan. Surface runoff is slow, and internal drainage is moderately slow. The upper layers are practically free of stones and gravel. Loss of soil by erosion is moderate.

A few acres in this unit show little or no erosion. Although these areas are slightly higher in fertility, organic matter, and plant nutrients, they do not greatly differ from the normal soil in suitability for use or in the management they need.

Use and management.—Most of the soil is cleared. Only a few acres are used for crops or pasture; the rest is idle.

The soil is physically well suited to most of the common crops of the county, but is only moderately productive because of its low fertility and moderately low water-supplying capacity. It is easy to plow and to keep in good tilth. Some care is required to conserve the soil and maintain its fertility. Nearly all the field crops except alfalfa and other deep-rooted legumes respond fairly well. Nearly all the soil is now being developed for the protection and propagation of wildlife.

Paden silt loam, rolling phase (5 to 12 percent slopes) (Pb, 8).—This is a moderately well drained siltpan soil on high stream terraces. It was derived from a layer of loess 24 to 42 inches thick that lies over old general alluvium consisting mainly of limestone materials. Nearly all of this soil is in the Bodine-Mountview-Paden association, between the Big Sandy and the Tennessee Rivers. It is closely associated with Bodine, Mountview, Taft, Robertsville, Lindside, Melvin, and Huntington soils.

The upper 1 to 2 inches is a dark-gray or dark brownish-gray very friable silt loam. The rest of the surface layer consists of grayish-brown or pale-brown very friable silt loam. The subsoil is a yellowish-brown to brownish-yellow friable heavy silt loam or silty clay loam underlain by a siltpan at a depth of about 2 feet. A few small areas have chert throughout the profile.

The soil is strongly acid and low in organic matter. The upper layers are readily permeable to air, water, and roots, but the siltpan is only very slightly permeable. Runoff is moderately slow, and internal drainage is moderately slow. A water table forms over the siltpan during wet seasons. The upper soil layers are free of gravel,

but the material below the siltpan is interbedded with gravel in places.

Use and management.—Nearly all this soil is in woods, and none is being cleared. It has medium productivity and is easy to work and conserve. Its suitability for use is somewhat limited by slow internal drainage. All of the soil is included in a game refuge. It is well suited to forestry and probably will be kept in woods.

Paden silt loam, eroded rolling phase (5 to 12 percent slopes) (Pc, 8).—This is a moderately eroded moderately well drained siltpan soil on old, high terraces. The parent material is old mixed alluvium, chiefly limestone, that has been covered by a thin layer of loess.

From 25 to 75 percent of the original surface soil has been removed by erosion. In places, tillage has mixed some of the subsoil with the remnants of the original surface layer. The present surface layer consists of grayish-brown, pale-brown, or yellowish-brown friable silt loam. The subsoil, a yellowish-brown or brownish-yellow friable silty clay loam, is underlain by a compact siltpan at a depth of about 2 feet.

The soil is strongly to very strongly acid and low in organic matter, plant nutrients, and water-supplying capacity. The layers above the siltpan are permeable to air, water, and roots. The siltpan is very slowly pervious. Surface runoff is medium, and internal drainage is moderately slow. The upper soil is free of gravel, but thin beds of gravel lie below the siltpan in places.

This soil includes small patches that are severly eroded. Gullies have cut down into the soil to variable depths, and some of them are too wide or deep to be crossed with farm implements.

Use and management.—All of this soil has been cleared. Only a few acres are now used for pasture or for corn and lespedeza along with adjoining soils. The rest is idle.

The soil will grow many of the crops common to the county, but the naturally low productivity, further depleted by continuous cropping and erosion, results in low yields. The soil is moderately easy to work but moderately difficult to conserve and to keep in good tilth. Most of it is now part of a wildlife preserve.

Paden silty clay loam, severely eroded rolling phase (5 to 12 percent slopes) (Pd, 9).—This is a moderately well drained siltpan soil on high stream terraces. It is the most eroded of the Paden soils. It differs from the eroded rolling phase in having lost more soil material, which means it has less favorable tilth, lower supplies of organic matter and plant nutrients, and a lower water-holding capacity. The parent material was a thin mantle of silt over old stream-deposited sediments. This alluvium washed chiefly from upland soils derived from cherty limestone material. This soil occurs in the Bodine-Mountview-Paden soil association with other Paden soils and Taft, Robertsville, Lindside, Melvin, Mountview, and Bodine soils.

Most or all of the original surface layer has been carried away by erosion. In most places the upper subsoil forms the plow layer. Gullies have cut into the soil to variable depths, and some cannot be crossed with farm machinery.

The present surface layer ranges from grayish-brown to yellowish-brown friable silt loam or silty clay loam. The subsoil is yellowish-

brown to brownish-yellow friable silty clay loam. It is underlain at a depth of about 2 feet by a compact siltpan.

The soil is very low in organic matter, strongly acid, and deficient in available plant nutrients. Its ability to absorb and retain water is poor because of erosion. The material above the siltpan is permeable to roots, air, and moisture, but the siltpan is very slowly pervious. Surface runoff is medium to rapid, and internal drainage is moderately slow. The soil varies chiefly in thickness of the layers and amount of erosion.

Use and management.—All of the soil has been cleared. It is now idle and is in an area being developed for the preservation of wildlife.

The soil has been injured severely by erosion and now has very low productivity for crops and pasture. Bare spots are common. The soil is very poorly suited to field crops. Yields are low. Trees are difficult to establish and grow slowly. If carefully managed, the soil is probably best suited to pasture or trees. Good management practices which include liberal use of amendments will be necessary to establish and maintain even fair-quality pasture. The soil is difficult to work. Gullies interfere with the use of heavy farm machinery.

Providence silt loam, undulating phase (2 to 5 percent slopes) (Pr, 7).—This moderately well drained weak siltpan soil occurs on ridge crests in the moderately to strongly dissected uplands. The parent material is a layer of windblown silt less than 3½ feet deep that has been deposited upon sandy Coastal Plain material. This soil differs from the Lax soils in not being underlain by gravel, and from the Dulac soils in having a thinner less compact siltpan and lighter more permeable material in the lower substratum. The soil formed under a forest of mixed hardwoods. It occurs chiefly in the eastern half of the county. It is associated with Lexington, Ruston, and Loring soils, and with other Providence soils.

Profile description:

0 to 1 inch, dark-gray or dark brownish-gray mellow silt loam.
1 to 8 inches, pale-brown to grayish-brown mellow very friable silt loam; weak medium crumb structure; 6 to 10 inches thick.
8 to 24 inches, strong-brown or yellowish-brown friable silty clay loam or heavy silt loam; lower part slightly splotched with gray and strong brown in places; weak to moderate medium blocky structure; 14 to 24 inches thick.
24 to 34 inches, siltpan of moderately compact brownish-yellow silt loam or silty clay loam splotched with gray, yellow, and brown; 8 to 14 inches thick.
34 inches +, brownish-yellow or reddish-brown moderately permeable sandy material streaked irregularly with gray, yellow, and brown; 5 to 25 feet or more thick.

The soil is strongly to very strongly acid and low in content of organic matter. The surface soil and subsoil are permeable to roots, air, and moisture, but the siltpan is only slowly permeable. Roots do not penetrate the pan layer. Runoff of rainfall is slow. Internal drainage is moderately slow and downward percolation is impeded by the siltpan. The water-supplying capacity is moderate.

Use and management.—This soil is wooded, mainly with post oak, blackjack oak, red oak, white oak, and hickory, but there is some yellow-poplar.

The soil is suitable for crops. It is easy to work and moderately

easy to conserve and to keep in good tilth. The soil is moderately productive and responds to good management. Its use suitability is limited somewhat by its restricted drainage, low fertility, and lack of moisture during dry periods. Many areas are on narrow ridges between steep soils not suited to crops and should be left in forest. If they were cleared, some areas next to crop-adapted soils would be suitable for pasture or for general field crops.

Providence silt loam, eroded undulating phase (2 to 5 percent slopes) (Ps, 7).—This is a moderately well drained siltpan soil on upland ridge crests. It has developed from a layer of loess less than 42 inches thick that is underlain by unconsolidated sandy material. The original forest cover was a mixed stand of deciduous hardwoods. The surface relief consists of mild single slopes. The soil is distributed chiefly over the eastern half of the county. It is associated with Lexington, Loring, Dulac, and Ruston soils, and with other Providence soils. Most of it is in the Providence-Lexington association.

Erosion has unevenly removed 25 to 75 percent of the original surface layer, and in a few small spots the subsoil is exposed. Some mixing of surface and subsoil materials in the present plow layer has produced variations in color and texture, and has affected other physical properties. The present surface layer consists of pale-brown to yellowish-brown friable silt loam. The subsoil, a strong-brown to yellowish-brown friable silty clay loam, is underlain at depths of 24 to 28 inches by a weak siltpan.

The soil is strongly to very strongly acid throughout. It is low in organic matter, deficient in plant nutrients, and moderate in water-supplying capacity. Although the surface soil and subsoil are permeable to air, moisture, and roots, the siltpan is only slightly permeable. Runoff is slow to moderately slow. Internal drainage is medium. It is restricted in the lower part by the slowly pervious siltpan.

Use and management.—All of this soil has been cleared of timber. Most of it is now used for corn, cotton, small grains, and lespedeza. About 20 percent is idle and 25 percent is in pasture.

This is a moderately productive soil. The relief and other characteristics favor easy cultivation of crops, conservation against erosion, and maintenance of good tilth. The low fertility, restricted internal drainage, and moderate water-supplying capacity of the soil somewhat limit its use suitability. However, it responds to management. Its productivity can be increased by using crop rotations that include legumes and grasses and by applying adequate amounts of soil amendments. Corn, cotton, tobacco, wheat, oats, barley, soybeans, potatoes, lespedeza, crimson clover, whiteclover, and red clover are among the adapted crops. Alfalfa and other deep-rooted legumes are more successful on this soil than on Lax and Dulac soils, but they require a high level of management.

Providence silt loam, rolling phase (5 to 12 percent slopes) (Pt, 8).—This moderately well drained, weak siltpan soil occurs on narrow ridge crests or hillside slopes in the moderately dissected uplands. The parent material consists of a deposit of loess less than 42 inches deep, underlain by relatively permeable sandy Coastal Plain material.

The profile is similar to those of Lax and Dulac soils, but the Lax is underlain by beds of gravel, and the Dulac has a thicker more compact siltpan. The forest cover consists of mixed hardwoods. The soil occurs mostly in the eastern half of the county. It is associated with Lexington, Loring, Ruston, and other Providence soils. Most of it is in the Providence-Lexington association.

Profile description:

0 to 1 inch, dark-gray or dark brownish-gray mellow silt loam.
1 to 8 inches, pale-brown to grayish-brown very friable mellow silt loam; 6 to 9 inches thick.
8 to 24 inches, strong-brown or yellowish-brown friable silty clay loam or heavy silt loam; lower 4 or 5 inches slightly mottled with gray and strong brown; entire layer 14 to 22 inches thick.
24 to 34 inches, siltpan of moderately compact brownish-yellow silt loam or silty clay loam mottled with gray, yellow, and brown; 8 to 14 inches thick.
34 inches +, brownish-yellow or reddish-brown moderately friable sandy material streaked with gray, yellow, and brown; 5 to 25 feet or more thick.

The soil is strongly to very strongly acid and apparently low in organic matter. The surface soil and subsoil layers are readily permeable to air, moisture, and roots, but the siltpan is only slightly permeable. Runoff is medium. Internal drainage is moderately slow and restricted by the siltpan. The water-supplying capacity is moderate.

Use and management.—Nearly all areas of this soil are wooded by post, red, white, and blackjack oaks and hickory.

The soil is suitable for crops but its steeper slopes make it more difficult to conserve than the undulating phase of Providence silt loam. When cleared, the soil needs more careful management because it is more likely to erode. It is moderately productive of most crops and is moderately easy to cultivate and to keep in good tilth. Most areas are surrounded by or next to large areas of steep soils that restrict or limit their suitability for efficient cropping. Some, however, may be used with bordering crop-adapted areas for general field crops, shallow-rooted legumes, and grass.

Providence silt loam, eroded rolling phase (5 to 12 percent slopes) (Pu, 8).—This is a moderately well drained siltpan soil of the uplands. It has developed from an uneven mantle of silt less than 42 inches deep, underlain by unconsolidated sandy Coastal Plain material. This soil occurs on narrow ridge crests and on gentle slopes of a moderately dissected landscape. Nearly all areas are in the eastern part of the county. They are associated with Lexington, Ruston, Freeland, and Briensburg soils, and with other Providence soils.

From 25 to 75 percent of the original surface layer of this soil has been carried away by erosion. The present surface layer varies considerably in thickness, and in places the subsoil is exposed. Under cultivation, mixing of surface soil and subsoil material has produced somewhat heavier textures and different colors in parts of the plow layer. The present surface layer consists of pale-brown to yellowish-brown friable silt loam. The subsoil is strong-brown to yellowish-brown friable silty clay loam. It is underlain at depths of 24 to 28 inches by a weak siltpan.

The soil is strongly to very strongly acid, low in content of organic

matter, and low in water-supplying capacity. The surface soil and subsoil are readily permeable to air, moisture, and roots, but the siltpan is only slightly permeable. Runoff is medium, and internal drainage is moderately slow.

Use and management.—All of this soil has been cleared for crops and pasture. Most of it is now used for corn, cotton, and lespedeza. About 25 percent is idle and covered with native weeds, vines, and brush. A few acres are in pasture along with adjoining soils.

Cropping and erosion have depleted the soil of some of its plant nutrients and organic matter; as a result it is medium to low in productivity. It is moderately easy to cultivate, but the stronger slopes make necessary more careful management than that for the undulating phase of Providence silt loam. The soil has somewhat limited adaptability for crops because the siltpan retards internal drainage. It responds readily to good management, and moderately high crop yields can be maintained. If well fertilized, it is suitable for a wide variety of crops, including corn, cotton, tobacco, potatoes, wheat, oats, soybeans, lespedeza, grasses, and shallow-rooted legumes. The siltpan reduces its suitability for alfalfa, but this crop does better than on Lax or Dulac soils.

Providence silty clay loam, severely eroded rolling phase (5 to 12 percent slopes) (Pw, 9).—This is a moderately well drained siltpan soil of the uplands. It was derived from an uneven layer of loess underlain at depths of 42 inches or less by sandy Coastal Plain materials. Areas are associated with areas of Lexington, Ruston, Briensburg, and Beechy soils and with other Providence soils. Most of this soil is in the Providence-Lexington association.

Most or all of the original surface layer of this soil and in places a part of the subsoil have been removed by erosion. The present plow layer has been changed by the mixture of upper subsoil material with the remains of the old surface layer during cultivation. Shallow gullies are common. A few that have cut through the siltpan cannot be crossed with heavy farm implements. Small patches between gullies in some areas are only moderately eroded and still have much of the original surface material.

The plow layer of this soil is a complex pattern of silt loam, heavy silt loam, and silty clay loam that varies in color from grayish brown or pale brown to yellowish brown. The subsoil is strong-brown to yellowish-brown friable silty clay loam 16 to 24 inches thick, the lower few inches of which are splotched with yellow, gray, and strong brown. This layer is underlain at a depth of about 2 feet by a weak siltpan.

The soil is strongly to very strongly acid and very low in organic matter and water-supplying capacity. The upper horizons are permeable to air, moisture, and roots, but the siltpan is only slightly permeable. The absorptive capacity of the soil has been severely reduced by erosion. Surface runoff is rapid. Internal drainage is moderately slow and is impeded by the siltpan.

Use and management.—All of this soil has been cleared and used for corn, cotton, small grains, lespedeza and pasture, but most of it is now idle. A few acres are used for crops or pasture along with adjoining soils.

The soil has been severely damaged by erosion and is now very low in organic matter and plant nutrients. It is very poorly suited to either crops or pasture. It is very low in productivity, and many patches remain bare or support only a scant vegetation. The soil is difficult to work and conserve. It is somewhat difficult to maintain in good tilth. The soil becomes sticky and plastic when wet, but dries out so quickly during droughts that plants may be damaged.

Careful, efficient management is essential. Probably the soil is best suited for pasture or for trees. After a period of good pasture management, fertility may be improved and physical properties restored to the point where the soil can again be used for crops.

Robertsville silt loam (0 to 2 percent slopes) (Rc, 12).—This is a gray poorly drained soil on stream terraces. It is the lightest in color and poorest in natural drainage of the related Wolftever, Taft, and Robertsville group of soils. Parent material consists of old mixed alluvium washed from uplands underlain by a wide variety of rocks, mostly limestone. The native forest was chiefly water oak, willow oak, willow, sweetgum, hickory, and other hardwoods tolerant of wet soil. The soil occupies nearly level or slightly depressed areas. It occurs on low terraces along the Tennessee and the Big Sandy Rivers in association with Taft, Wolftever, Egam, Melvin, Lindside, and Huntington soils. Nearly all of this soil is covered by Kentucky Reservoir.

Profile description:

0 to 8 inches, gray or light brownish-gray very friable mellow silt loam or silt splotched lightly with strong brown; 6 to 10 inches thick.
8 to 20 inches, light-gray friable silt loam or silty clay loam; some strong-brown and light-yellow mottles; 15 to 30 inches thick.
20 to 30 inches, light-gray compact or very compact silty clay loam or silty clay splotched yellow and strong brown; 8 to 12 inches thick.
30 inches +, stratified layers of light-gray silt loam and silty clay loam containing varying amounts of strong-brown mottles; extends to depths of 6 feet or more.

The soil is strongly to very strongly acid. Varying amounts of semi-hard to hard dark-colored concretions are scattered over and through the soil. They are moderately abundant and conspicuous in the hardpan layer. In places some small angular pieces of chert occur in the soil. The soil is very low in organic matter and deficient in plant nutrients. Runoff is slow, and internal drainage is very slow. The surface and upper subsoil are permeable to air, water, and roots if not saturated. Plant roots grow mostly in the upper part of the soil; few penetrate the hardpan.

Use and management.—Most of Robertsville silt loam has been submerged by Kentucky Reservoir. The few acres above the water level are idle or wooded. They are included in the game refuge.

The soil is too poorly drained and low in productivity for most of the field crops. It is fairly well suited to a few crops, as sorghum cane and soybeans, that have a short growing season and can be planted late in spring. Lespedeza does fairly well where surface drainage is good. The soil can be used for pasture, but it does not produce much forage. Drainage by open ditches would somewhat broaden the usefulness of the soil and increase average yields of pasture and some forage crops.

Routon and Henry silt loams (0 to 2 percent slopes) (Rh, 12).—This mapping unit consists of light-colored poorly drained soils on broad slightly dissected uplands. In some areas the two soils are so intricately associated that it is impractical to outline each unit separately. In most areas, however, one or the other of the soils occupies most of the acreage. Both soils have developed from deep accumulations of loess that were deposited on Coastal Plain material. They developed under the influence of poor drainage on nearly level to slightly depressed areas.

These soils resemble each other very closely in texture and color, but the Routon contains slightly more organic matter, lacks a distinct claypan, and is more productive. Both soils are related to and are associated with the Memphis, Loring, Calloway, Grenada, and Center soils. They occur mainly in the western part of the county. Most of the acreage is in the Memphis-Loring-Lexington and the Loring-Center-Memphis associations. The native vegetation consisted of willow, pin, blackjack, and post oaks, willow, maple, blackgum, and other water-tolerant trees.

Profile description of Routon silt loam:

0 to 6 inches, brownish-gray to gray very friable mellow silt loam; 4 to 10 inches thick.
6 to 22 inches, light-gray friable silt loam or silty clay loam splotched strong brown and pale yellow; 10 to 20 inches thick.
22 to 34 inches, light-gray moderately friable heavy silt loam or silty clay loam mottled with strong brown; contains many large, soft concretions; slightly compact in places; 10 to 14 inches thick.
34 to 40 inches +, gray to light brownish-gray friable silt loam or heavy silt loam splotched and streaked with strong brown; underlain at depths between 4½ and 8 feet by Coastal Plain material.

The profile of Henry silt loam differs from that of Routon silt loam chiefly in being lighter colored, predominantly light gray throughout, and in having a well-developed claypan at a depth of about 18 inches. For a detailed profile description of Henry silt loam see page 81.

The Routon soil of this mapping unit is medium to strongly acid. The Henry soil is strongly to very strongly acid. Both vary from medium to low in content of organic matter. The Routon soil is apparently more fertile than the Henry soil. The upper layers of both soils are permeable, but circulation of air is greatly restricted by the high water table. Most plant roots are in the upper few inches. Small to large dark-colored concretions are scattered throughout the soils. In places in the Routon soil they are concentrated at depths of 18 to 20 inches. The concretions in the Henry soil are generally harder and smaller than those in the Routon. The water-supplying capacity is moderately low. The Henry soil has somewhat lower capacity for holding water than the Routon soil.

Use and management.—About 40 percent of this unit is wooded (pl. 8, *A*). Of the cleared land, about 30 percent is used for hay and pasture and about 10 percent for cultivated crops. The rest of the cleared land is idle or is used occasionally for pasture. Corn and lespedeza are the principal crops.

Poor drainage greatly restricts the use of these soils. Crop yields average low and failures are frequent. These are difficult soils to drain adequately and economically. Differences of natural fertility

within the same area complicate management. Both soils are easy to work at the proper moisture content. They are not likely to erode.

These are "cold" soils; they drain and warm up very slowly in spring. They may not be ready to cultivate before late spring or early summer. Supplies of lime, organic matter, and nitrogen are low in many places, and the soils do not have enough phosphorus and potassium.

The soils are probably best suited to crops that need only a short growing period and that will tolerate extreme variations in moisture. Sorghum, cowpeas, soybeans, alsike clover, and lespedeza do well on the Routon soil, and fairly well on the Henry. Where surface drainage is good, corn can be grown, but the yields vary considerably and average low. The Routon soil is well suited to pasture and is productive if well fertilized. Redtop, ryegrass, sudangrass, fescue, bermudagrass, whiteclover, Ladino clover, and alsike clover are good pasture crops. The Henry soil is much less productive than the Routon but will produce the same crops if properly managed. On most farms, it is probably best to use this unit for hay, pasture, or trees.

Ruston fine sandy loam, rolling phase (5 to 12 percent slopes) (Rm, 14).—This is a well-drained red sandy soil of the uplands. It was derived from sandy Coastal Plain material. The areas are widely distributed but most of them are in the Lexington-Ruston soil association.

Profile description:

0 to 3 inches, grayish-brown to dark grayish-brown very friable fine sandy loam or loose loamy fine sand; layer is stained dark with organic matter; 2 to 4 inches thick.

3 to 12 inches, pale-brown to light yellowish-brown very friable fine sandy loam; 6 to 10 inches thick.

12 to 28 inches, yellowish-red to red friable fine sandy clay loam to light clay loam; 10 to 15 inches thick.

28 to 36 inches, red to reddish-brown friable fine sandy clay loam; 8 to 24 inches thick.

36 inches +, red to reddish-brown layers of loose to slightly coherent sand or loamy sand; contains thin beds of quartz gravel in places; some layers mottled or streaked with brown, gray, and yellow.

The soil is strongly to very strongly acid and low in organic matter and plant nutrients. It is very permeable to air, water, and roots. Surface runoff is slow, and much of the rainfall soaks into the ground. The open porous material allows rapid internal drainage. The soil has a moderately low water-supplying capacity. Small patches of quartz gravel and fragments of sandstone are present in places. This unit includes 22 acres that have slopes of only 2 to 5 percent. It also contains many areas influenced by a very thin discontinuous silt mantle that results in a less sandy surface layer.

Use and management.—Practically all of this soil is wooded. The timber has been cut over several times. The present stand is mostly oak and hickory with a few cedar, dogwood, and sweetgum in places. The yield of forest products is low and of inferior quality.

This soil is moderately productive and is easy to work. It is moderately difficult to conserve if cleared. Most areas are more or less isolated among hilly soils of little use for agriculture. Such areas are probably best suited to forestry. However, the soil is physically

suitable for many common crops, and under good management fair yields can be obtained. Small fruits, melons, and vegetables also will respond well. Pasture yields are low during dry periods because of the low water-supplying capacity. The deeper rooting crops would probably manage better at such times.

Ruston fine sandy loam, eroded rolling phase (5 to 12 percent slopes) (Ro, 14).—This is a well-drained red sandy soil of the uplands. It was like the rolling phase of Ruston fine sandy loam, but erosion has removed 25 to 75 percent of the original surface layer. The present plow layer is a mixture of surface soil and subsoil. In a few patches all the old surface layer is gone and the subsoil is exposed. The present surface layer is pale-brown to light yellowish-brown very friable fine sandy loam. The subsoil is yellowish-red to red friable light clay loam or fine sandy clay loam.

The soil is strongly to very strongly acid throughout and low in organic matter and plant nutrients. The soil material is porous, internal drainage is rapid, and the water-supplying capacity is low. Roots readily penetrate the soil, which is well aerated.

Use and management.—Although all this soil is cleared, less than 25 percent is used for crops or pasture. The rest is idle and covered with an uneven stand of broomsedge, weeds, briers, and brush. The vegetation is very sparse in some spots. Some areas are grazed occasionally but the pasture is of poor quality. Corn, cotton, small grains, and lespedeza are the principal farm crops. Yields average low without fertilizers. Some small plots are used for vegetables, melons, and small fruits.

The soil is fairly well suited to various kinds of general farm crops or to some special crops. Yields depend greatly on the management practiced. The soil is acid, low in organic matter, and apparently deficient in potassium and phosphorus. It is easy to cultivate but moderately difficult to conserve. The water-holding capacity is low and apt to be insufficient for crops during dry periods. This soil is generally used and managed according to the practices used on adjoining cropland. Cotton, corn, small grains, lespedeza, soybeans, potatoes, and vegetables can be grown. Although sod offers better protection from erosion, pastures are somewhat difficult to maintain (pl. 2, *A*).

Ruston fine sandy loam, severely eroded rolling phase (5 to 12 percent slopes) (Rp, 15).—This is a well-drained, red, sandy soil. Most, or all, of the original surface layer has been lost. In most places the present plow layer is a mixture of surface and subsoil material. Nevertheless, much of the former surface layer remains in the small patches between gullies. Shallow gullies that are not completely filled by tillage are common. Deep gullies in many areas cannot be crossed with heavy farm implements.

The plow layer consists of light yellowish-brown to yellowish-red fine sandy loam to fine sandy clay loam. It is underlain by a subsoil of red or yellowish-red friable fine sandy clay loam. The subsoil becomes somewhat lighter textured and more sandy with depth. It overlies stratified beds of red, yellow, and light-gray sands.

This soil is strongly to very strongly acid and very low in organic matter and water-supplying capacity. The material is very permeable

to air, water, and roots. Small patches have some gravel on the surface and scattered through the soil.

Use and management.—All of this soil has been cleared and used for crops and pasture. Almost all of it is now idle. The vegetation is a poor stand of broomsedge, weeds, brush, and briers, not yet well enough established to control erosion. Some patches are nearly bare.

This soil has been so severely eroded that it is poor for crops or pasture. The content of organic matter and plant nutrients has been greatly depleted by erosion, and the fertility level is very low. The soil is moderately easy to work but difficult to conserve. It does not supply enough water for crops during dry periods. Cultivated crops grow poorly and produce low yields. It is difficult to establish and maintain pastures. Loblolly and shortleaf pines seem to be best for this soil.

Ruston fine sandy loam, hilly phase (12 to 25 percent slopes) (Rr, 14).—This is a well-drained, red, sandy soil of the strongly dissected uplands. It has developed from sandy Coastal Plain materials. The native vegetation is hardwood forest, mainly oak, hickory, and yellow-poplar. The soil is distributed over most of the county, principally in the Lexington-Ruston association. It is associated with Memphis, Loring, and Lexington soils, and with other Ruston soils.

Profile description:

0 to 3 inches, grayish-brown to dark grayish-brown very friable fine sandy loam or loose loamy fine sand; 2 to 4 inches thick.
3 to 10 inches, pale-brown to light yellowish-brown very friable fine sandy loam; 5 to 10 inches thick.
10 to 24 inches, yellowish-red or red friable light clay loam to fine sandy clay loam; 10 to 15 inches thick.
24 to 40 inches, red to reddish-brown friable light sandy clay loam or fine sandy loam; 6 to 24 inches thick.
40 inches +, red to reddish-brown layers of loose to slightly coherent sand or loamy sand interbedded with thin layers of yellow or light-gray sand; beds of quartz gravel occur in places.

The soil is strongly to very strongly acid and low in organic matter. It is readily permeable to roots, air, and moisture. Surface runoff and internal drainage are rapid, and the soil has a low water-supplying capacity. In places, a little gravel and a few fragments of ferruginous sandstone are scattered on the surface and through the soil.

This soil includes a few areas in the eastern part of the county that have a yellowish-brown to brownish-yellow subsoil. In many other places the surface layer is brown or light-brown fine sandy loam or loamy fine sand. The underlying red subsoil is like that of the Orangeburg soils, which are not mapped separately in this county. This variation is somewhat more productive than the typical Ruston soil.

A very thin mantle of silt covers some parts of the Ruston soil. Small spots of Lexington silt loam are included; these form an intricate pattern with the Ruston soil. Such areas are more productive and better suited to crops and pasture than most of this unit.

Use and management.—All of this soil is forested, chiefly with red oak, post oak, blackjack oak, white oak, and hickory, and a scattering of dogwood, cedar, yellow-poplar, and sweetgum. The woods have

been cut over a number of times, and nearly all the salable timber is gone.

The soil is low in organic matter, lime, and mineral plant nutrients and consequently low in productivity. Cleared areas would be moderately easy to work. They would be difficult to conserve because of the steep slopes and loose sandy surface. This soil is much less useful because it is so extremely likely to erode. Fair pastures can be established although a very high level of management is required to maintain them. On most farms this soil is best used for forest.

Ruston fine sandy loam, eroded hilly phase (12 to 25 percent slopes) (Rs, 14).—This is a well-drained, red, sandy soil of the uplands. It is associated with other soils of the uplands, including the Memphis, Loring, and Lexington soils and other Ruston soils; with soils of the stream bottoms, chiefly the Beechy, Hymon, and Shannon; and with soils of the colluvial lands, mainly the Tigrett and Briensburg. It is widely distributed and occurs mostly in the Lexington-Ruston association.

As much as 75 percent of the original surface layer of this soil has been removed by erosion. The red subsoil is conspicuously exposed in many severely eroded spots. Shallow gullies have been cut in most areas. In most places the plow layer is within the old surface layer, but in other places some material has been mixed in. The present surface layer is pale-brown to light yellowish-brown very friable fine sandy loam. The subsoil is yellowish-red to red friable clay loam or fine sandy clay loam.

The soil is strongly to very strongly acid and very low in organic matter. All layers are very permeable to roots, air, and moisture. Most of the rainfall soaks into the soil and seeps out at the base of the slopes. Internal drainage is rapid. The water-supplying capacity is low. In places fragments of cemented sandstone and small quantities of gravel are distributed through the soil.

Use and management.—All of this soil has been cleared and used for general farm crops or pasture. Most of it is now idle or in unimproved pasture. Cotton, corn, and lespedeza are grown on small acreages, but yields are low. Kudzu is grown on a few acres to check erosion.

The soil has limited value for crops or pasture because it is steep, eroded, and likely to erode further. It is very low in organic matter and lime and deficient in plant nutrients. Crop yields are low without fertilizers.

The soil is moderately easy to work with light implements, but heavy equipment is not suitable. The soil is difficult to conserve, either in crops or pasture. The porosity of the soil reduces water-holding capacity. Supplies of moisture frequently are not enough for crops. Many areas are located among steep soils that cannot be used for farming. Forestry is the most practical use for this soil.

Ruston fine sandy loam, severely eroded hilly phase (12 to 25 percent slopes) (Rt, 15).—This is a well-drained red sandy soil of the uplands. It has been seriously injured by erosion. It developed from sandy Coastal Plain material. Memphis, Lexington, and other Ruston soils are closely associated with this soil.

In most places this soil has lost nearly all of the original surface layer through erosion. Gullies are numerous. Some are shallow enough to be crossed by farm machinery, but others are deep V-shaped gullies that require bridges for crossing. Some areas between gullies may still have a substantial part of the original surface soil. In many places the plow layer includes material turned up from the subsoil. The texture of the surface soil ranges from fine sandy loam to fine sandy clay loam, and the color from light yellowish brown to yellowish red. The subsoil is yellowish-red to red friable fine sandy clay loam or light clay loam.

Use and management.—All of this soil has been cleared, but now practically all of it is idle. A few areas of broomsedge and poor-quality native grasses are used occasionally for grazing.

Erosion has reduced fertility to a very low level. The soil is very low in organic matter and essential plant nutrients. It has a very low water-supplying capacity. The moderately steep slopes and numerous gullies are difficult to work and to conserve. Considerable effort, time, and expense would be necessary to reclaim this soil for crops or pasture. Forestry is its best use on nearly all farms. Reforestation is easier than on Cuthbert or Dulac soils. Shortleaf and loblolly pine do well and, if gullying is prevented by mechanical means, usually stabilize erosion within a few years.

Ruston fine sandy loam, steep phase (25+ percent slopes) (Ru, 15).—This is the steepest of the Ruston soils. Its slopes may be 60 percent or more in gradient. The soil is red, well-drained to excessively drained, and sandy. It has developed from unconsolidated beds of Coastal Plain sands. Most of it occurs in the Lexington-Ruston association, which covers a belt of strongly dissected land running through the central part of the county. It is associated principally with Lexington, Hymon, and Beechy soils, and other Ruston soils.

The profile is similar to that of Ruston fine sandy loam, hilly phase, but the soil layers are thinner and less distinct. The soil is strongly to very strongly acid, very low in organic matter, and apparently low in plant nutrients. Surface runoff is rapid and internal drainage is rapid to very rapid. The water-supplying capacity is low. Some gravel and small fragments of sandstone occur in places but do not interfere much with cultivation.

About 10 percent of this soil is complexly associated with Lexington soils. The increase in general fertility contributed by the Lexington soils does not greatly alter the agricultural value of the land. The advantage of greater fertility is almost offset by the steepness and inaccessibility of the areas.

Use and management.—All of this soil is in forest consisting chiefly of post oak, red oak, blackjack oak, white oak, hickory, sweetgum, dogwood, and yellow-poplar. The woods have been cut over several times and now contain very little sawtimber.

The steep slopes, low fertility, low water-supplying capacity, and extreme danger of erosion make this soil unsuitable for crops or pasture. It would be very difficult to work and conserve if cleared and used for crops. Forestry is apparently its best use.

Sequatchie fine sandy loam (2 to 5 percent slopes) (Sc).—All of this soil is now covered by the waters of Kentucky Reservoir. It was a brown friable well-drained sandy soil on the low stream terraces along the Tennessee River. The parent material was a mixture of coarse and fine sediments that washed from limestones, sandstones, shales, and Coastal Plain formations. The surface was nearly level to undulating. Most areas were 6 to 12 feet above the adjacent bottom lands and therefore were not flooded often.

Profile description:

0 to 12 inches, dark-brown very friable fine sandy loam.
12 to 18 inches, brown very friable fine sandy loam; a weak medium blocky structure.
18 to 30 inches, yellowish-brown fine sandy loam.
30 inches +, yellowish-brown clay loam with some splotches of gray.

The texture of the second and third layers was more nearly loam in some places. In other places the lowest layer graded to a more sandy texture as depth increased. There were some mica flakes throughout the soil

This soil was strongly acid and had a moderate supply of organic matter and plant nutrients. It was permeable and easily worked. It was usually ready for field work and planting early in spring.

Use and management.—Almost all of this soil was cleared and cropped. Corn was the most common crop, but soybeans, cowpeas, and lespedeza were also grown. In average years, corn yielded about 30 bushels an acre, and lespedeza about 1.2 tons. Its smooth surface, good tilth, good drainage, freedom from flooding, and ability to respond to fertilization made this soil suitable for a wide range of crops.

Shannon silt loam (0 to 2 percent slopes) (Sb, 1).—This is a well-drained brown soil along stream bottoms. The material from which it formed was mixed alluvium that was washed from uplands. Most of these uplands were underlain by loess, but some were underlain by sandy Coastal Plain material. Most of the soil is on the flood plains of the smaller streams, but some is on the natural levees of the larger streams. The soil is widely distributed throughout the county. It is related to and associated with Hymon and Beechy soils but is better drained. It is also associated with Ruston, Lexington, Guin, Briensburg, Tigrett, Freeland, and Hatchie soils. The native forest includes oak, maple, elm, sweetgum, yellow-poplar, and beech.

Profile description:

0 to 14 inches, grayish-brown to brown mellow very friable silt loam; 8 to 16 inches thick.
14 to 30 inches, brown to yellowish-brown friable silt loam or heavy silt loam; 8 to 20 inches thick.
30 inches +, brownish-gray to brownish-yellow irregularly bedded layers of silt loam, fine sandy loam, and gravelly material splotched with gray in places; 2 to 5 feet or more thick.

This soil is medium to strongly acid and is moderate in content of organic matter. All layers are readily permeable to air, moisture, and roots. Surface runoff is slow, and internal drainage is medium. In a few places, chiefly in the Brandon-Guin-Lax soil association, a little gravel is on the surface and scattered through the soil. The water-supplying capacity is very high. Small patches of Hymon silt loam

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and Shannon fine sandy loam, too small to be shown separately on the map, are included.

Use and management.—About 80 percent of the soil is cleared and used for crops and pasture. Wooded areas have a moderate stand of hardwoods, chiefly oak and hickory, but also some beech, elm, sweetgum, ironwood, and ash. Corn covers the largest acreage of cultivated land. It can be grown for many successive years on some fields. Lespedeza, small grains, red clover, cotton, and soybeans are on a small acreage.

Shannon silt loam is a highly productive soil. It is easy to work and very easy to conserve and to keep in good tilth. Moisture supplies are good for crops, but the usefulness of the soil is somewhat limited by the chance of flooding. The soil is very well suited to corn, hay, and most forage crops. Cotton, small grains, alfalfa, and vegetables cannot be grown successfully on areas that are frequently overflowed. Floodwaters sometimes scour this soil or deposit sandy material over it. Ordinarily, however, flooding improves fertility by adding sediments that contain good supplies of plant nutrients and organic matter.

Shannon fine sandy loam (0 to 2 percent slopes) (Sa, 1).—This is a well-drained, brown, sandy soil of the flood plains. The alluvium from which it developed came chiefly from uplands underlain by sandy Coastal Plain materials, but some loess is included. The soil occupies nearly level areas on the low bottom lands subject to flooding. This soil is widely distributed in small stream valleys in association with Ruston, Lexington, Beechy, and Hymon soils, and with other Shannon soils. The forest cover is mixed hardwoods.

Profile description:

0 to 12 inches, brown to brownish-gray very friable fine sandy loam; 6 to 15 inches thick.
12 to 30 inches, yellowish-brown or light yellowish-brown very friable sandy loam, loam, or loamy fine sand; 10 to 24 inches thick.
30 inches +, light brownish-gray to brownish-yellow fine sandy loam or loamy fine sand interbedded with silt loam; splotched with gray and strong brown in places; 2 to 6 feet thick.

This is a strongly to very strongly acid soil. It is moderately low in organic matter and plant nutrients but has a high water-supplying capacity. It is very permeable to air, roots, and moisture. Its nearly level relief and open porous material allow very little water to flow away over the surface. Internal drainage is medium to rapid.

Use and management.—About 75 percent of the soil has been cleared and is farmed with adjacent soils. Corn is the principal crop. Some fields have been used continuously for corn for a number of years. A few acres are used for lespedeza, cotton, and small grains.

This is potentially a highly productive soil, but the chance of flooding limits the choice of crops. It is very well suited to corn and most forage crops but is poorly suited to cotton, small grains, and alfalfa. All the common crops, however, can be grown on the few areas that are seldom flooded. This soil is easy to work, to conserve, and to keep in good tilth. The content of organic matter and plant nutrients is low, but the ease of maintaining good tilth and the high water-supplying capacity make this soil responsive to good management.

Taft silt loam (0 to 2 percent slopes) (Ta, 10).—This is an imperfectly drained hardpan soil on stream terraces along the Tennessee and Big Sandy Rivers. In degree of development, color, and drainage it is intermediate between the better drained Wolftever and the more poorly drained Robertsville soils. The Taft soil has developed from old stream alluvium that was washed from uplands underlain by limestone and other rocks. Nearly all of this soil is now flooded by Kentucky Reservoir. Wolftever, Egam, Robertsville, Melvin, Lindside, and Huntington are closely associated soils. The original hardwood forest included oak, sweetgum, ash, hickory, maple, and sycamore.

Profile description:

0 to 6 inches, light brownish-gray or light-brown friable silt loam; 5 to 8 inches thick.
6 to 14 inches, yellowish-brown to pale-yellow friable heavy silt loam or silty clay loam; 6 to 12 inches thick.
14 to 22 inches, pale-yellow or light yellowish-brown heavy silt loam or silty clay loam mottled with light gray and strong brown, 6 to 12 inches thick.
22 to 35 inches, compact silt loam or silty clay loam highly mottled with gray, yellow, and brown; 8 to 18 inches thick.
35 inches +, mottled gray, yellow, and brown moderately friable silty clay loam; extends to depths of 5 feet or more.

The soil is strongly to very strongly acid, low in organic matter, and medium in fertility. The dark-colored semihard to hard concretions are in the mottled layers and are conspicuous in the hardpan. The surface soil and upper subsoil allow penetration of roots, air, and water, but the underlying hardpan is nearly impenetrable. Little of the rainfall flows away over the surface. Internal drainage is slow, and water accumulates over the hardpan in rainy seasons. The water-supplying capacity is moderate.

Use and management.—Only a few acres of this soil are now above the flood level of Kentucky Reservoir. These are in the game preserve. Before the filling of Kentucky Reservoir, most of the soil was cleared for farming. Corn and lespedeza were the principal crops, and some of the soil was in pastures.

The range of crops adapted to Taft silt loam is somewhat limited by imperfect drainage, but the soil is physically suited to short crop rotations and intensive cropping. Its suitability for crops could be broadened by improving surface drainage and by applying soil amendments. Corn, cotton, lespedeza, soybeans, whiteclover, alsike clover, and redtop are among suitable crops. The soil is not suited to alfalfa. It is easy to work at the proper moisture content, but this content lasts only a short time. The soil is easy to conserve but hard to drain properly.

Tigrett silt loam (1 to 5 percent slopes) (Td, 3).—This is a well-drained brown soil on colluvium or local alluvium. These materials washed or rolled down from upland soils, which were derived mainly from loess but partly from Coastal Plain material. The soil occurs on outwash fans at the mouth of small branches that empty onto the larger flood plains, on gently sloping areas at the base of upland slopes, and along the narrow mildly sloping bottoms of intermittent drains. Areas of the soil are above ordinary flood stage. Throughout the county the soil is associated with Briensburg, Beechy, Hymon,

and Shannon soils of the valleys and with most of the upland soils derived from loess. The native vegetation was a hardwood forest of oak and hickory.

Profile description:

0 to 14 inches, brown to dark grayish-brown very friable silt loam; 10 to 18 inches thick.
14 to 30 inches, brown to yellowish-brown friable silt loam or heavy silt loam; 12 to 18 inches thick.
30 inches +, yellowish-brown, light yellowish-brown, or reddish-brown friable silt loam; contains, in places, a few splotches of gray and strong brown; 18 to 36 inches or more thick.

The soil ranges from medium to strongly acid. It is readily permeable to roots, air, and water. The supplies of organic matter and plant nutrients are moderately high. Surface runoff is medium to slow, and internal drainage is medium. The water-supplying capacity is very high.

The depth of the accumulated material varies somewhat, and so does the color and texture of the subsoil. In some places, the subsoil contains thin layers of fine sandy loam. The soil is normally free of stones and gravel. Many areas, however, especially in the Brandon-Guin-Lax soil association, are underlain by gravelly material, and some of these may have a little gravel in the profile.

Use and management.—About 65 percent of this soil has been cleared. Most of the cleared land is used for crops. A few acres are idle or in pasture. The soil is farmed intensively, mostly to corn. Some fields have been used for corn for many years. Cotton, lespedeza, small grains, red clover, and grass hay are grown on a few acres. Many areas are more or less isolated among poorly drained bottom-land soils or steep hilly soils. Some such areas are wooded. Others that are cleared are idle or are used only occasionally for pasture or a crop.

Tigrett silt loam is highly productive and easy to work and conserve. It is well suited to intensive cropping, and many kinds of crops are successfully grown. Moderate to high yields are obtained by using amendments. The soil is very responsive, and much higher yields than those now harvested can be maintained. Row crops may be grown year after year without injuring the soil. The relief is suitable for heavy farm machinery, but the narrow strips in which the soil usually occurs are cultivated more efficiently with horse-drawn tools. Most of the soil is above flood stage. It is well suited to all the crops commonly grown.

Tigrett fine sandy loam (1 to 5 percent slopes) (Tc, 3).—This is a well-drained brown sandy soil on young colluvium or local alluvium. Typically it occurs in narrow bands at the base of upland slopes, on alluvial fans at the mouth of small streams entering larger streams, or along the bottoms of intermittent drainways. It has formed from very recent materials washed or rolled from nearby upland soils. These upland soils originally developed from loess and Coastal Plain materials. This soil is associated chiefly with Ruston, Lexington, Providence, Beechy, Hymon, and Shannon soils. It is sandier than Tigrett silt loam. The native forest was chiefly oak and hickory.

Profile description:

0 to 12 inches, brown, yellowish-brown, or grayish-brown very friable fine sandy loam; 6 to 14 inches thick.
12 to 36 inches, brown to yellowish-brown friable or very friable fine sandy loam or loam; 10 to 30 inches thick.
36 inches +, grayish-brown to yellowish-brown very friable fine sandy loam; some silt loam and loam is interbedded; gray and strong-brown splotches occur in places; 1 to 3 feet thick.

This soil is strongly to very strongly acid and has low to moderate supplies of organic matter and plant nutrients. It is very permeable to roots, air, and moisture and almost free of gravel and stones. Most of the soil is above flood level. All except some very sandy areas have a high water-supplying capacity. Surface runoff and internal drainage are both medium.

Use and management.—An estimated 65 to 75 percent of this soil has been cleared for cultivation. About 70 percent of the cleared land is used regularly for crops. The rest is idle or is used occasionally for pasture. The cropland is used mostly for corn, but cotton, lespedeza, small grains, melons, and vegetables are also grown. Yields are moderate under management practices now common.

This soil is productive under good management and is very easy to work and conserve. It is acid and lacks organic matter and plant nutrients, but it readily responds to soil amendments. The soil is well suited to practically all the crops commonly grown and can safely be used intensively.

Tippah silt loam, eroded undulating phase (2 to 5 percent slopes) (Tf, 7).—This is a moderately well drained, yellow, siltpan soil of the uplands. It has formed from an irregular deposit of loess, less than 42 inches deep, that is underlain by very clayey beds of Coastal Plain material. The native vegetation was deciduous hardwood forest. This soil is associated with Dulac soils and other Tippah soils in the south-central part of the county. Most of it is in the Dulac-Hymon-Tippah soil association.

Profile description:

0 to 6 inches, pale-brown, grayish-brown, or yellowish-brown mellow very friable silt loam; weak medium crumb structure; 0 to 9 inches thick.
6 to 20 inches, yellowish-brown to brownish-yellow friable silty clay loam; weak to moderate medium blocky structure; lower part splotched with gray and strong brown in most places; 12 to 18 inches thick.
20 to 33 inches, siltpan of moderately to strongly compact light yellowish-brown or brownish-yellow silt loam to silty clay loam; highly mottled in gray, yellow, and strong brown; 10 to 15 inches thick.
33 inches +, dense very plastic clay mottled with gray, yellow, red, and brown; 1 to 4 feet or more thick; underlain by beds of hard clay shale.

This soil has lost 25 to 75 percent of its surface layer through erosion. The thickness of the original layer has been reduced considerably, and in many places the present plow layer includes a part of the subsoil. Small exposures of the subsoil are common and conspicuous. The present surface layer varies in color and texture, according to the amount of subsoil material mixed with the surface soil.

This soil is strongly to very strongly acid and low in organic matter and plant nutrients. The siltpan is only slightly permeable but the material above it allows air, moisture, and roots to penetrate readily.

Little water seeps through the siltpan, but water accumulates above it during rainy periods. Surface runoff is medium. The soil has a moderate water-supplying capacity. It is free of gritty material and gravel.

Use and management.—About 87 percent of this soil has been cleared and at some time used for general farm crops. Now, nearly all the cleared land is idle. Only a few acres are used for corn, cotton, and hay. The wooded areas have a poor stand of oak and hickory.

The soil is physically well suited to general farm crops, but its natural productivity is low. It is easy to work but moderately difficult to conserve, and deficient in organic matter, lime, and plant nutrients. Soil amendments are necessary for satisfactory yields of most crops. Some of this soil is idle because it occurs in small areas among eroded, unproductive soils. If properly fertilized, a fairly wide range of crops, including corn, cotton, lespedeza, small grains, and sericea, can be grown. Alfalfa, however, does not yield well even under high levels of management. This soil is potentially suitable for general crops, but effective use for this purpose will probably depend on whether nearby soils are being used for crops.

Tippah silt loam, rolling phase (5 to 12 percent slopes) (Tg, 8).—This is a moderately well drained siltpan soil on uplands. It is underlain by dense, plastic clay. The parent material consists of a layer of loess 2 to 3½ feet thick that overlies very slowly permeable beds of clay.

The topmost layer, 1 to 2 inches thick, is stained dark by organic matter. The rest of the surface layer consists of pale-brown to grayish-brown very friable silt loam. The subsoil, a yellowish-brown to brownish-yellow friable silty clay loam, is underlain by a compact siltpan at depths of 20 to 24 inches. Very plastic clay lies below the siltpan.

This strongly to very strongly acid soil is low in organic matter and apparently deficient in plant nutrients. The surface and subsoil layers are readily permeable to air, water, and roots, but the siltpan and underlying clay are nearly impervious. Surface runoff is medium, and internal drainage is moderately slow. The water-supplying capacity is about medium.

Use and management.—All of this soil is wooded, chiefly with oak and hickory but also with a scattering of dogwood, cedar, and sweetgum. Nearly all the better timber has been cut. The present stand is small and of poor quality.

This soil could produce many general farm crops, but its sloping relief would make it erodible if it were cleared and cultivated. It is easy to work but moderately difficult to conserve. It is deficient in organic matter and in plant nutrients. Fertilizers are necessary for satisfactory yields of adapted crops. The danger of erosion, limited water-supplying capacity, and low fertility limit the selection and rotation of crops. On most farms, it is probably best to leave this soil in forest unless the associated soils are as well or better suited to crops or pasture.

Tippah silt loam, eroded rolling phase (5 to 12 percent slopes) (Th, 8).—This is a moderately well drained siltpan soil. It has a layer of nearly impervious, dense, very plastic clay underlying the

siltpan. This soil is like Tippah silt loam, rolling phase, except that erosion has carried away from 25 to 75 percent of the upper soil layer. Cultivation has mixed some subsoil with the surface soil material. In places subsoil material is exposed at the surface. The present surface layer is pale-brown to grayish-brown or yellowish-brown friable silt loam. The subsoil is yellowish-brown to brownish-yellow friable silty clay loam. A compact siltpan is at a depth of 20 to 24 inches.

Unless limed recently, this soil is strongly to very strongly acid. It is low in organic matter, plant nutrients, and water-supplying capacity. The upper soil layers readily allow roots, air, and moisture to penetrate. The siltpan is only slightly permeable, and the underlying clay is almost impenetrable. Surface runoff is medium. Internal drainage is restricted by the siltpan and the clay beneath. Water accumulates above the siltpan in rainy periods.

Use and management.—All of this soil has been cleared. Nearly all the cleared land is now idle or in low-quality pasture. A few acres in larger fields are used for corn, cotton, and lespedeza. Average yields are low.

This soil is low in fertility and water-supplying capacity; consequently it has low productivity for most crops. It is moderately easy to work but difficult to conserve. Slopes are mild enough for the efficient use of all farm implements. Slow internal drainage may keep the soil wet until late in spring and delay field work. During extended dry periods, crops are likely to be injured by lack of moisture. Because of the low fertility, strongly acid reaction, danger of further erosion, low water-supplying capacity, and sloping relief, the soil has somewhat limited suitability for crops and requires exacting management. Many general field crops are grown with fair success under a high level of management. Some crops, as alfalfa, are not suited to this soil. It is not a good soil for fruit trees.

Tippah silty clay loam, severely eroded rolling phase (5 to 12 percent slopes) (Ti, 9).—This is a moderately well drained siltpan soil in the uplands. It has dense, plastic clay beneath the siltpan. Most of this soil is in the south-central section, where it is associated mainly with Dulac soils and other Tippah soils.

All or nearly all of the original surface layer has been washed away from a large part of each area. The plow layer contains enough subsoil material to have partly lost the texture, consistence, color, and other properties of the former surface layer. The plow layer forms a complex pattern of silt loam to silty clay loam, colored brownish gray, pale brown, and yellowish brown. The subsoil is yellowish-brown or brownish-yellow friable silty clay loam. It is underlain by a siltpan at depths of 24 to 30 inches. Below the siltpan is dense, very plastic brown clay highly mottled with red, gray, and yellow. Many shallow gullies occur, and a few gullies cannot be crossed with heavy machinery.

This soil is strongly to very strongly acid, very low in organic matter, and very low in water-supplying capacity. The siltpan has only a slight permeability, but the material above it allows roots, air, and moisture to penetrate. Surface runoff is rapid, and internal drainage is moderately slow.

Use and management.—All this soil has been cleared for general farm crops, but now most of it is idle land or wasteland. A few acres are grazed occasionally. The vegetation, mostly broomsedge and weeds, briers, vines, and scrubby brush, has a low value for pasture.

In its present state, the soil is very poorly suited to crops or pasture. Its value for crops has been substantially lowered by severe erosion. The soil has been greatly depleted of essential plant nutrients and organic matter and has very low productivity. The soil is difficult to work and very difficult to conserve. Its ability to absorb moisture has been impaired, and moisture supplies are frequently low. Much of the rainfall flows away rapidly over the eroded surface. The restriction of internal drainage by the siltpan allows the soil to become extremely wet or dry.

If very carefully managed, a fair pasture might be obtained on this soil, and its fertility and physical properties might be improved gradually so that crops could be grown again. Some areas are so located and associated with very poor cropland that they should be considered for tree plantings.

Wolftever silt loam (2 to 5 percent slopes) (Wo).—All of this soil was permanently flooded by Kentucky Reservoir. It was a moderately well drained soil on low stream terraces, in and next to the bottom lands of the Tennessee River. It had a very compact silty clay loam subsoil. Its parent material was mixed sediments that originated chiefly from limestones and shales, and to less extent from sandstones, Coastal Plain formations, and micaceous rocks. The surface was gently undulating to sloping. The soil was high enough above the bottom lands to be free of flooding nearly every year.

Profile description:

0 to 9 inches, brown to dark-brown, friable silt loam.
9 to 28 inches, yellowish-brown, compact, firm silty clay loam with a moderately developed medium blocky structure; 15 to 25 inches thick.
28 inches +, yellowish-brown grading to brownish-yellow, firm silty clay loam with some gray and brown mottles.

There were some mica flakes throughout this soil. In cultivated areas the firm-textured subsoil was nearer the surface. On some of the stronger slopes, erosion had exposed this subsoil material.

Use and management.—About one-fifth of this soil still supported native forest at the time the reservoir was constructed. About 10 percent was idle. The rest was used chiefly for corn, lespedeza, and soybeans. Under average conditions, corn yielded about 22 bushels and lespedeza about 0.8 ton an acre. The compact subsoil made tillage somewhat difficult and caused the soil to be droughty. The soil was probably better suited to fall-sown small grains, soybeans, and hay crops such as lespedeza and sericea lespedeza than it was to corn or other late-season row crops.

Wolftever silty clay loam, eroded phase (2 to 5 percent slopes) (Wp).—All of this soil was permanently flooded by the Kentucky Reservoir. It was like Wolftever silt loam except that it had been so eroded that the plow layer, in most places, was a mixture of the original silt loam surface soil and the more clayey subsoil. Much of the soil occupied narrow slopes next to the slightly higher smoother areas of Wolftever silt loam.

Profile description:

0 to 5 inches, grayish-brown silty clay loam.
5 to 21 inches, yellowish-brown compact silty clay loam of moderately developed medium blocky structure.
21 inches +, yellowish-brown grading to brownish-yellow firm silty clay loam or silty clay with some gray and brown mottles.

In some patches all of the original surface soil had been lost, and the plow layer was brownish-yellow silty clay. The surface was somewhat uneven in places because of shallow gully erosion.

Use and management.—Most of this soil had been cleared and was being used for corn, soybeans, and lespedeza. A few acres may have been idle. The clayey plow layer made the soil rather difficult to work, and the compact subsoil caused moisture supplies to be less favorable for plant growth than in some of the more friable soils. This soil was not well suited to intensive use. It could well have been used chiefly for fall-sown small grains, hay, and pasture.

SOILS OF HENRY COUNTY, INTERPRETATION AND USE

This section has three parts. The first lists basic management practices applicable anywhere in the county and then describes practices desirable for groups of soils that need about the same kind of management.

The second shows which soils can be used for about the same purposes with about the same difficulty in management. The third shows which soils are likely to be found together and therefore may have to be managed together.

About 48 percent of the soils of the county are suitable for crops. About 39 percent are unsuitable for crops but could be used for pasture. The remaining 13 percent are suitable for neither crops nor pasture and should be used for forest.

USE AND MANAGEMENT OF SOILS

Many of the farmers of Henry County now manage their soils well, and their crop yields are much higher than the county average. In general, these farmers are following practices that are basic to good farming (*8*). They do these things:

(1) Use of good crop varieties that are adapted to the county.
(2) Use a suitable rotation that makes the best use of the water on the land. Generally, this will include (a) a legume to help maintain nitrogen, (b) a tilled crop to control weeds, (c) a deep-rooted crop to draw nutrients from the subsoil and to increase permeability, and (d) pasture, meadow, or a green-manure crop to maintain organic matter and tilth.
(3) Return barnyard or green manure to the soil to maintain the supply of nitrogen and fresh organic matter.
(4) Apply lime, phosphorus, nitrogen, potassium, or any combination of these materials, where needed. (See your county agent about testing the soil before you apply lime or fertilizer.)
(5) Take reasonable care in preparing the seedbed and in following the practices recommended by the Experiment Station regarding the time and rate of planting.
(6) Take suitable measures to control weeds, insects, and diseases.

MANAGEMENT GROUPS

The 141 soil units mapped in this county vary in their suitability for use and in the management they need. Nevertheless, there are soils that need about the same kind of management and therefore can be placed in one group. There are 15 such groups in this county. These groups are described in the following pages, and a table of estimated yields is provided for each. The 15 groups are shown by colors on the soil map.

Two levels of management are discussed for each group, and for each group a table gives average yields of the main crop on each soil under the two levels. The management used to get the yields in columns A of each table is the management usually practiced in the county at the present time.

The management that would result in yields like those of columns B is the management which is described for each management group under the heading *Management Requirements*. A few of the farmers follow these practices now, and the yields they obtain are better than average yields for the rest of the county.

The yields given for each level of management are average yields based on a 5-year period. Higher yields are common in good crop seasons, especially if fertilization is much heavier than usual. New crop varieties, new combinations of cultural practices, and plant diseases or insect pests may affect these yields considerably. To raise the yields from those in columns A of the yield tables to those in columns B will probably require at least two rotation cycles under the higher level of management.

Management requirements for permanent pasture, as well as for tilled crops, are discussed for most groups. Generally the soils of each group are similar in their requirements for tilled crops and in requirements for permanent pasture. Some groups differ only in the requirements for tilled crops, because the tilled crops require more exacting management than the pastures.

MANAGEMENT GROUP 1—NEARLY LEVEL WELL-DRAINED ALLUVIAL SOILS

The bottom-land soils in this group are some of the most fertile and productive crop and pasture soils in the county (table 7). They are generally in long narrow strips and are associated with more poorly drained bottom soils. The nearly level relief reduces surface drainage but favors the use of heavy equipment.

Although these soils have good internal drainage, they may be covered by floodwater for a time during spring and in winter. The soils are deep, mellow, and easy to work and to keep in good tilth. They can be cultivated under a fairly wide range of moisture conditions. Their materials are readily permeable to air, moisture, and roots and are free of gravel or stones. Their workability is very good. Moisture supplies are generally enough for crops.

The productivity of these soils is very high. High average crop yields are obtained from adapted crops, even without fertilizer, although all crops respond very well to its use. Compared to other soils in the county, these are well supplied with organic matter and plant nutrients. They are replenished periodically by additions of fresh sediments.

TABLE 7.—*Soils of management group 1 and expected yields for selected crops at two levels of management*

[Yields in columns A can be expected over a period of years at the prevailing level of management, as described in *Present Use and Management*; yields in columns B can be expected under a high level of management such as is suggested under *Suitable Crops and Rotations* and *Management Requirements*; blank spaces indicate soil is not suitable for crop at the management level specified at the head of the column]

Soil	Corn		Cotton		Wheat		Lespedeza		Red clover		Tobacco		Pasture	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
	Bu.	*Bu.*	*Lbs.*	*Lbs.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Lbs.*	*Lbs.*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Ennis silt loam	40	70					1.0	1.5	1.0	1.8	1,200	1,600	90	150
Shannon silt loam	35	65	300	500	12	16	1.1	1.3	1.0	1.7	1,200	1,600	70	170
Shannon fine sandy loam	25	60	300	475	10	13	1.0	1.2	.9	1.2	1,100	1,500	70	150

[1] "Cow-acre-days" is the number of days per year that 1 acre will graze 1 cow without injury to the pasture.

Erosion is not a problem, although floodwaters may cause scouring and redeposition of soil materials. Conservability is excellent.

Present use and management.—About 80 percent of the Ennis and 40 percent of the Shannon soils are now flooded by Kentucky Reservoir. Only 1,807 acres of these soils are now available for farming. They are important on only a few farms

Cleared land is used intensively, mostly for corn and lespedeza. Few acres are in pasture, because the soils are well suited to more intensive use. Less than 10 percent of the acreage is in woodland, which is mixed hardwoods Some cleared areas have a very narrow fringe of trees bordering stream channels

Some farmers alternate corn and lespedeza. Others grow corn for a few years, then follow it with lespedeza for 1 or 2 years. Corn is grown almost continuously on many fields. A seedbed is prepared as early as possible; the corn is tilled as often as necessary. Ordinarily no fertilizer, lime, or extra organic matter is added.

Some fields include areas of less well-drained soils, and the same crop may be planted on all. The growth and resulting yields differ on these areas because of differences in fertility and drainage.

Although the soils of management group 1 are well suited to pasture, they are seldom used for this purpose because they are valuable for crops. Pastures receive no special management. They consist of various mixtures of grasses and legumes, which in places may be crowded by native weeds. Few farmers mow or fertilize these pastures.

Suitable crops and rotations.—Crops well suited to these soils are corn, sorghum, fescue, and orchardgrass. The soils are fairly well suited to white, Ladino, and red clovers.

Although the adapted crops can be successfully grown almost continuously, a short rotation is better on most farms. Suggested rotations are:

Corn (soybeans), corn.
Corn, corn, lespedeza.
Corn, soybeans, red clover.
Whiteclover and orchardgrass or tall fescue for pasture, corn.

These soils are well suited to soybeans for hay or seed. They are poorly suited to alfalfa, although this crop is grown in places. Red clover is apparently better suited.

Sowing winter legumes, such as vetch and crimson clover, between the corn stubble and plowing them under as green manure in the spring should prove beneficial, especially where corn is grown every summer.

Cotton and potatoes can be grown in short rotations with lespedeza or red clover and corn. Cotton usually makes a very rank growth and is slow to mature and open.

Small grains can be grown along streams that flood only for short periods. Small grains are susceptible to lodging and disease on these soils, and they usually mature later than on soils of the uplands.

Management requirements.—Special practices to keep the soil in good tilth are usually not necessary. These soils can be tilled at a wide range of moisture content without being seriously injured.

These level soils are not likely to erode. However, they are over-

flowed at intervals, and there is some danger of scouring by floodwaters. Hedges, levees, or diversion ditches will protect the soil from flood currents and from overwash from higher land.

Good crop yields are produced on these soils, even without lime or fertilizer. The soils respond very well to fertilizer, however, and if it is used, high yields can be maintained under intensive use.

Red clover needs both lime and phosphorus. Phosphorus will benefit many other crops. Some crops need potassium if none has been added in recent years.

Nitrogen fertilizers are needed if corn is grown continuously. A legume grown in the crop rotation generally supplies enough nitrogen for good yields, especially for the crop directly following the legume. Organic matter should be maintained by using crop residues, green manure, or barnyard manure. During floods some areas receive silt that contains organic matter.

Detailed recommendations can be obtained from the local county agricultural agent concerning the kind and amount of fertilizer a crop needs on a particular soil.

These soils are especially valuable for pasture because they are usually moist and productive even during hot dry seasons. They are not generally used for pasture because they are worth more as crop soils. Orchardgrass or fescue and white or Ladino clover is a good pasture mixture for these areas. Lime and phosphorus should be provided, and grazing should be properly controlled. Weed control is usually not a serious problem, but some mowing is necessary to keep weeds from thriving. Droppings should be spread on heavily grazed pastures.

MANAGEMENT GROUP 2—NEARLY LEVEL IMPERFECTLY DRAINED ALLUVIAL SOILS

These soils occupy a considerable part of the bottom-land acreage throughout the county (table 8). A large acreage of Beechy soils is included, usually in a complex association with poorly drained Hymon soils. The soils are nearly level, and most of them are imperfectly drained.

These soils are friable and easy to work under proper moisture conditions. They usually have no gravel or stones. Permeability of the soil materials is rapid, but surface runoff is very slow. The soils have a high to very high water-supplying capacity. The water table is near or at the surface for part of the year. Circulation of air and water and development of plant roots are restricted by the water-table level.

Because of the nearly level relief, these soils are easy to conserve. They are periodically overflowed. There is some danger of overwash of sand and other materials from nearby severely eroded uplands. In most places, the fresh sediments deposited by floodwaters help to maintain the natural fertility of the soils.

These soils are very productive of adapted crops and pasture. Many farmers find them valuable for producing feed crops and pasture. The content of organic matter varies, but is usually moderate. The soils are somewhat deficient in plant nutrients, and are strongly to very strongly acid in reaction.

TABLE 8.—*Soils of management group 2 and expected yields for selected crops at two levels of management*

[Yields in columns A can be expected over a period of years at the prevailing level of management, as described in the text under *Present Use and Management;* yields in columns B can be expected under a high level of management such as is suggested under *Suitable Crops and Rotations* and *Management Requirements;* blank spaces indicate soil is not suitable for crop at the management level specified at the head of the column]

Soil	Corn		Lespedeza		Red clover		Pasture	
	A	B	A	B	A	B	A	B
	Bu.	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Hymon silt loam	25	60	1.2	1.3	------	1.6	90	160
Hymon fine sandy loam	22	55	.9	1.0	------	1.3	70	135
Hymon and Beechy silt loams	16	50	.6	1.1	------	------	40	145
Hymon and Beechy fine sandy loams	15	45	.5	.9	------	------	35	130
Lindside and Lobelville silt loams	25	60	.8	1.0	------	------	90	160

[1] "Cow-acre-days" is the number of days per year that 1 acre will graze 1 cow without injury to the pasture.

Present use and management.—Nearly 5 percent of the acreage covered by these soils has been flooded by Kentucky Reservoir. Nearly all the acreage of Lindside and nearly all of the acreage of Lobelville soils have been covered. More than 60 percent of the unflooded soils support water-tolerant forest species.

Most of the cleared land is used for corn, sorghum, soybeans, and some miscellaneous crops. Many farms grow most of their corn on these soils. Corn yields are moderately high in good seasons, but in wet seasons corn produces little or nothing.

The soils are tilled as soon as they dry out enough in the spring. In years that have a very wet spring, many areas may be left idle all year.

Some of the acreage is planted to lespedeza hay or pasture. A large quantity of hay and pasture is produced, but it is of poor quality because the native grasses, sedges, and weeds mix with the lespedeza and, in some places, crowd it out entirely.

Fertilizers and lime are not generally used. Corn is grown on some fields year after year without fertilizer. No special practices are followed for drainage.

Suitable crops and rotations.—Although these soils are good for crops and good to excellent for pasture, their imperfect drainage and the chance of being flooded limit the choice of crops.

Crops that produce good yields when properly managed are corn, lespedeza, sorghum, and soybeans, and white, alsike, red, or Ladino clovers, orchardgrass, and fescue for pasture. Alfalfa, cotton, and fruit trees are not well suited to these soils. Small grains are likely to lodge or be winterkilled.

These soils can be used intensively, but a short rotation that includes a legume would improve crop yields. Suggested rotations are:

Continuous corn.
Corn, lespedeza.
Corn, pasture for 2 or more years.

Grain sorghum or sorghum for sirup can be substituted for corn in these rotations.

Management requirements.—The productivity of these soils and the range of adapted crops could be increased by artificial drainage. Whether such drainage is practical or not depends on the cost, the engineering problems, and the need for the increased production which might result. Diversion ditches, open ditches, or bedding may control surface water and improve internal drainage.

The soils are not likely to erode. In some places scouring of stream banks may occur. Diversion ditches may be needed in a few places to prevent overwash of soil material from nearby slopes.

These soils produce fair to moderate yields of crops without fertilizers. To increase productivity or to keep it at a high level, commercial fertilizers and lime will have to be added.

All crops on these soils usually need phosphorus. Legumes must have, in addition, lime and potassium. Row crops should have moderately heavy applications of a complete fertilizer.

Enough nitrogen for moderate yields of row crops can be supplied by a legume that is turned under during the crop rotation. Commercial nitrogen must be provided to get continued high yields. Barnyard manure will supply nitrogen and potassium and increase the organic-matter content, but it should be supplemented with phosphorus. The county agricultural agent can test these soils and suggest specific kinds and amounts of fertilizer.

These are good pasture soils because they are productive and have plenty of moisture. The amount of forage can be increased by applications of phosphorus and lime. The quality of the forage can be improved by planting a mixture of orchardgrass or fescue with white-clover. If fertility is low, lespedeza and redtop are better choices. Pastures should not be overgrazed. Droppings should be spread when pastures are heavily grazed. Weeds should be mowed regularly.

MANAGEMENT GROUP 3—IMPERFECTLY TO WELL-DRAINED NEARLY LEVEL TO SLIGHTLY SLOPING COLLUVIAL-ALLUVIAL SOILS

These soils are highly productive of crops and pasture (table 9). They lie in narrow strips in valleys or upland depressions. Relief is nearly level to mildly sloping. They are seldom flooded, but they receive soil material washed from nearby slopes.

These soils are widely distributed throughout the county, but many of the areas cannot be used efficiently because they are small in size and are divided by drainageways, or isolated among large areas of hilly soils.

These friable mellow soils are easy to work. The Greendale soil has some chert fragments, but they do not interfere much with cultivation. The soils are generally permeable to roots, air and moisture,

TABLE 9.—*Soils of management group 3 and expected yields for selected crops at two levels of management*

[Yields in columns A can be expected over a period of years at the prevailing level of management, as described in the text under *Present Use and Management;* yields in columns B can be expected under a high level of management such as is suggested under *Suitable Crops and Rotations* and *Management Requirements;* blank spaces indicate soil is not suitable for crop at the management level specified at the head of the column]

Soil	Corn		Cotton		Wheat		Lespedeza		Alfalfa		Red clover		Sweet-potatoes		Tobacco		Pasture	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
	Bu.	*Bu.*	*Lbs.*	*Lbs.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Bu.*	*Bu.*	*Lbs.*	*Lbs.*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Briensburg silt loam	25	65	300	450	12	16	1. 1	1. 5	-----	-----	1. 0	1. 8	----	----	1, 000	1, 400	70	140
Briensburg fine sandy loam	20	60	280	425	10	14	. 7	. 9	-----	-----	. 9	1. 4	----	----	800	1, 200	65	125
Greendale cherty silt loam	30	55	200	350	10	15	1. 0	1. 3	2. 0	3. 0	1. 0	1. 8	50	85	1, 400	1, 900	80	125
Tigrett silt loam	40	75	350	600	14	18	1. 2	1. 5	2. 5	3. 5	1. 4	1. 9	80	175	1, 400	2, 000	120	180
Tigrett fine sandy loam	30	70	325	550	10	15	. 8	1. 0	2. 0	3. 0	1. 1	1. 4	60	125	1, 300	1, 800	75	150

[1] "Cow-acre-days" is the number of days per year that 1 acre will graze 1 cow without injury to the pasture.

but the Briensburg soils have a subsoil and fluctuating high water table that restrict penetration of air and roots.

The soils of this group range from imperfectly drained to well drained. Most of them have a good water-supplying capacity, but those that are sandy and cherty supply limited water. In dry weather crop yields are considerably reduced on the sandy and cherty soils.

Soils of this group are comparatively high in plant nutrients, but low in lime and moderate in content of organic matter. Their productivity is high or very high. They are very easy to conserve, and erosion is not a serious problem.

Present use and management.—Nearly 2 percent of the acreage in this group has been flooded by Kentucky Reservoir. About 75 percent of the acreage has been cleared for crops. The Greendale soil is not used for crops because almost a third of it is flooded and the rest is idle or in the game preserve.

In the cleared areas, some fields are planted to corn every year, but many others support a rotation of corn and lespedeza. Most of the lespedeza is cut for hay, but some is used for pasture. Cotton and small grains are sometimes grown where these soils are farmed along with higher land. Small patches of sweetpotatoes, melons, and vegetables are grown. A few acres are in permanent pasture.

Most fields receive little or no lime, fertilizer, or other soil amendments. In fields where these soils are farmed with soils of the terraces or uplands, corn and small grains receive some commercial fertilizer. Hay crops are not fertilized. Liming is seldom practiced. Some farmers plow under crimson clover, rye, or other cover crops before planting corn.

Suitable crops and rotations.—These soils are suitable for many crops. Corn and hay do very well on them. Cotton, tobacco, clovers, soybeans, sorghum, vegetables, and pasture crops can be grown successfully under proper management. Small grains are not especially well suited to these soils because they tend to lodge and winterkill.

Alfalfa is grown on these soils, but it does better on upland soils like the Memphis and Lexington. It does not grow well on the imperfectly drained Briensburg soils. The Briensburg soils are not good for cotton or tobacco, but they are very well suited to vegetable crops.

The soils of this management group can stand intensive cropping. If it is necessary to plant row crops every year, it is advisable to plow under a cover crop such as crimson clover every year. Rotations that would be good are:

Continuous corn.
Corn, lespedeza.
Corn, wheat, red clover.
Corn, cotton (crimson clover or vetch).
Cotton, oats, lespedeza.

Cotton, potatoes, or a vegetable crop can be substituted for the corn, and oats or barley for the wheat. Alfalfa can be used instead of red clover, but the rotation will need to be longer.

Management requirements.—Normally, no special attention to tillage or water-control practices is required. Contour tillage would benefit crops on some of the mild slopes. Good tilth is easily main-

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tained, and the soils can be worked at a fairly wide range of moisture content without injury.

Control of runoff is a problem only in a few places where water and eroded soil material wash down from slopes above. Erosion may result, or the soil may be buried beneath unproductive material. Open diversion ditches would be useful in such places.

Although these soils are very high in fertility, compared to other soils of the county, they show improvement when properly fertilized. All of the soils need nitrogen, even where legumes are grown in the rotation. Phosphorus is generally required for high yields of most crops. Potassium is less likely to be deficient, but the less well-drained soils may require it for cotton and other depleting crops.

Most areas need lime if they are to produce crops like red clover and alfalfa. Addition of lime will benefit most of the crops grown on these soils. The soils used intensively for row crops should receive barnyard manure and crop residues to maintain their organic-matter content. For information in testing these soils and the amounts and kinds of fertilizers to be used, see the county agricultural agent.

These soils, valuable for pasture because they stay moist and highly productive during hot dry periods, are well suited to a mixture of orchardgrass or fescue with white or Ladino clover. Phosphorus is the chief requirement for these pastures. Lime and potassium will probably be needed also, especially on the Briensburg and Greendale soils.

Other management requirements include proper control of grazing and the scattering of droppings on heavily grazed pastures. Occasional mowing is required to keep weeds down.

MANAGEMENT GROUP 4—WELL-DRAINED FRIABLE LEVEL TO UNDULATING TERRACE AND UPLAND SOILS

The soils of this group are good to excellent crop and pasture soils (table 10). They are nearly level. Individual areas vary from a few acres to several square miles in size. Many acres are on wide, only moderately dissected ridges. Other areas occur as narrow strips or on long narrow winding ridgetops among hilly soils.

These soils are all very easy to till and to keep in good tilth. All are permeable to air, moisture, and roots. They have a high to very high water-supplying capacity. Moisture conditions are generally good for crops, except during long dry periods.

The productivity of these soils is high. They are moderately well supplied with plant nutrients but are somewhat low in organic matter. All are strongly acid.

Although these soils are susceptible to erosion, they are easy to conserve. Some of the areas show effects of erosion, but it has not yet lowered their productivity a great deal.

Present use and management.—These soils cover about 21 percent of the present land area of the county. About 7 percent of this group is covered with mixed hardwood trees. Nearly all of the cleared land is used for crops or pasture. A few small areas isolated among soils unsuitable for farming are left idle.

Cotton farming and general farming are the most common systems on soils of this group. Corn, cotton, and lespedeza are the main

TABLE 10.—*Soils of management group 4 and expected yields for selected crops at two levels of management*

[Yields in columns A can be expected over a period of years at the prevailing level of management, as described in the text under *Present Use and Management*; yields in columns B can be expected under a high level of management such as is suggested under *Suitable Crops and Rotations* and *Management Requirements*]

Soil	Corn		Cotton		Wheat		Lespedeza		Alfalfa		Red clover		Sweet-potatoes		Tobacco		Pasture	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
	Bu.	*Bu.*	*Lbs.*	*Lbs.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Bu.*	*Bu.*	*Lbs.*	*Lbs.*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Brandon silt loam:																		
Undulating phase	25	60	400	650	16	22	0.7	1.2	2.0	3.2	1.0	1.8	80	120	1,200	1,600	50	120
Eroded undulating phase	22	57	400	610	15	20	.6	1.1	2.0	3.0	1.0	1.7	60	100	1,000	1,400	30	100
Dexter silt loam:																		
Undulating phase	38	70	420	700	15	22	1.2	1.5	2.6	3.6	1.3	1.9	115	185	1,300	1,700	95	150
Eroded undulating phase	35	63	400	650	14	20	1.2	1.4	2.5	3.5	1.2	1.8	110	175	1,200	1,500	90	130
Lexington silt loam:																		
Undulating phase	30	68	450	725	16	22	.9	1.5	2.2	3.6	1.1	1.9	110	185	1,300	1,700	75	150
Eroded undulating phase	25	62	450	675	15	20	.8	1.4	2.0	3.5	1.0	1.8	100	175	1,200	1,500	70	130
Loring silt loam:																		
Undulating phase	35	62	450	700	15	19	.9	1.3	2.2	3.0	1.1	1.9	105	178	1,300	1,700	85	140
Eroded undulating phase	30	55	430	650	14	18	.8	1.1	2.1	2.8	1.0	1.8	100	175	1,200	1,500	80	120
Level phase	35	65	450	700	16	20	1.0	1.5	2.3	3.0	1.4	1.9	120	180	1,300	1,750	100	150
Memphis silt loam:																		
Undulating phase	35	70	460	750	16	21	1.0	1.5	2.5	3.6	1.1	1.9	110	180	1,300	1,800	85	175
Eroded undulating phase	30	63	450	700	15	20	1.0	1.5	2.4	3.5	1.0	1.8	100	175	1,200	1,600	80	150
Level phase	35	72	475	775	18	22	1.2	1.6	2.5	3.6	1.5	1.9	120	190	1,300	1,850	100	180

[1] "Cow-acre-days" is the number of days per year that 1 acre will graze 1 cow without injury to the pasture.

crops and cover the largest acreage. Sweetpotatoes are an important cash crop on a few farms, but they are planted on only a few acres. A little tobacco is grown next to the main tobacco belt of the county. Other minor crops are red, white, and crimson clovers, alfalfa, wheat, oats, barley, soybeans, vegetables, and some fruits.

Not all farmers in this area follow systematic rotations. Some grow row crops for 1 or 2 years, followed by lespedeza. Others leave the soil idle for a short time after intensive use for row crops. Some farmers practice a rotation in which corn is followed by wheat or oats, and then by lespedeza hay. Cotton is followed by small grains and lespedeza, or by corn, wheat, and lespedeza. Sometimes alfalfa or red clover is grown instead of lespedeza.

Many farmers apply small or medium amounts of complete fertilizer or superphosphate to corn, cotton, and small grains. Tobacco receives a moderate to heavy application of a high-analysis complete fertilizer. All available manure is used on row crops. Many farmers return organic matter and nitrogen to the soils by plowing under crimson clover, rye, or oats. Lime is used on many farms. Tillage is usually done thoroughly and on the contour.

Suitable crops and rotations.—These soils are very well suited to nearly all of the common crops. When properly fertilized and limed, these are among the best in the county for alfalfa and red clover. They are better suited to corn than the other soils of the uplands. Corn, cotton, tobacco, small grains, clovers, alfalfa, soybeans, sweetpotatoes, peanuts, vegetables, and fruits are suitable crops for these soils.

Soils of this group are suited to rather intensive use. When they are well managed, and the rotation includes a deep-rooted legume, these soils can be conserved and even improved while producing a row crop every 2 or 3 years. Rotations that might well be used on soils of this group are:

Corn, wheat, lespedeza 2 years.
Corn, cotton, wheat, red clover.
Cotton, small grain, lespedeza 2 years.
Cotton, vetch and oats, lespedeza.
Corn, soybeans, wheat, red clover.
Corn, wheat, clover, clover and grass.
Corn, wheat, alfalfa, orchardgrass 4 years or longer.
Corn or grain sorghum, oats, crimson clover.
Grain sorghum, Dixie crimson clover.

Tobacco or any of the truck crops can be substituted for the corn in these rotations. Barley or rye can be sown on lespedeza sod for winter cover and pasture, and plowed under in spring before corn is planted.

Management requirements.—These soils are easy to work, and their tilth can be maintained easily. They can be cultivated over a fairly wide range of moisture content.

These nearly level soils have no serious problems of water control or erosion. Proper choice of crops and addition of organic matter to the soils are usually enough to control erosion and conserve soil moisture. Contour tillage helps to control erosion, but engineering devices are usually not needed.

The soils of this group do not have enough lime, phosphorus, nitrogen, or potassium for high yields of most of the common crops. The crop response to fertilization is excellent (pl. 9, *A*). Alfalfa, red clover, and other deep-rooted legumes need lime and phosphorus for successful growth (pl. 9, *B*). Other legumes, especially lespedeza, greatly increase their yields when they receive lime and phosphorus. Phosphorus brings a good response from small grains and cotton, but not always from corn. Nitrogen is needed for high yields of almost all crops except legumes and the crops that follow next in the rotation. The legumes, cotton, sweetpotatoes, and many other crops need potassium. Heavy applications of a complete high-grade fertilizer should be made to vegetable crops, tobacco, and potatoes.

Properly conserved manure is an excellent source of both nitrogen and potassium, but it should be supplemented with phosphorus to keep the plant nutrients in balance. Winter cover crops and green-manure crops are useful to conserve soil moisture, improve tilth, and provide nitrogen and organic matter.

The county agricultural agent can advise about the testing of soils for available plant nutrients and about specific amounts and kinds of fertilizer needed.

These soils are well suited to pasture. If properly fertilized with phosphorus and lime, they produce high yields of good quality forage. The soils are especially well suited to crimson clover and small grains for winter pasture. Orchardgrass, fescue, white, Ladino, and red clovers, alfalfa, lespedeza, and other common pasture plants would do well on these soils. A mixture of white or Ladino clover with orchardgrass or fescue is well suited if soil fertility is at a high level. If fertility of these soils has been somewhat depleted, redtop and lespedeza are better. Properly controlled grazing and fertilization are usually effective in controlling weeds, but mowing is also necessary.

MANAGEMENT GROUP 5—WELL-DRAINED FRIABLE ROLLING TERRACE AND UPLAND SOILS, NOT SEVERELY ERODED

Soils of this group are good to very good for crops and pasture (table 11). They are similar to soils of management group 4 but need more exacting management because they are more strongly sloping. All of them are rolling, and some of them are eroded. This management group covers about 5 percent of the land in the county.

Most of these soils are medium textured. They are friable to very friable and are easy to work. They are readily permeable to air, roots, and moisture. Most of them are well drained and have a high or moderately high water-supplying capacity. The few acres of Ruston soils are excessively drained and hold less moisture for crops.

The Brandon, Lexington, and Mountview soils are shallow, but the Memphis, Loring, Dexter, and Ruston soils have moderately deep profiles. The deeper soils are high in productivity, but those that are eroded or shallow are only medium. The content of lime, nitrogen, and organic matter is low. These soils are strongly acid unless they have been limed recently. They are moderately difficult to conserve, especially if they are used frequently for row crops.

Present use and management.—About 42 percent of the acreage in this group is now woodland. Most of the Mountview soils are within

TABLE 11.—*Soils of management group 5 and expected yields for selected crops at two levels of management*

[Yields in columns A can be expected over a period of years at the prevailing level of management, as described in the text under *Present Use and Management*; yields in columns B can be expected under a high level of management such as is suggested under *Suitable Crops and Rotations* and *Management Requirements*; blank spaces indicate soil is not suitable for crop at the management level specified at the head of the column]

Soil	Corn		Cotton		Wheat		Lespedeza		Alfalfa		Red clover		Sweet-potatoes		Tobacco		Pasture	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
	Bu.	*Bu.*	*Lbs.*	*Lbs.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Bu.*	*Bu.*	*Lbs.*	*Lbs.*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Brandon silt loam:																		
Rolling phase	22	57	380	610	14	20	0.6	1.2	2.0	3.3	1.0	1.8	80	120	1,000	1,400	45	100
Eroded rolling phase	20	52	350	525	12	18	.5	.9	1.8	3.0	.9	1.6	50	90	800	1,125	25	80
Dexter silt loam:																		
Rolling phase	32	63	375	650	13	22	1.1	1.4	2.5	3.6	1.2	1.8	110	185	1,200	1,500	85	130
Eroded rolling phase	30	56	350	575	12	20	1.0	1.2	2.4	3.4	1.1	1.6	100	170	900	1,200	85	110
Lexington silt loam:																		
Rolling phase	25	62	450	675	15	22	.8	1.5	1.9	3.6	.9	1.9	100	180	1,200	1,500	65	130
Eroded rolling phase	20	55	400	600	14	18	.8	1.2	1.9	3.4	.9	1.6	90	170	1,000	1,200	60	110
Lexington-Ruston soils:																		
Rolling phases	25	50	260	450	10	14	.8	1.3	-----	3.0	-----	1.5	-----	125	------	1,000	35	100
Eroded rolling phase	20	45	250	400	10	12	.7	1.1	-----	2.8	-----	1.4	-----	85	------	900	25	85
Loring silt loam:																		
Rolling phase	30	55	430	650	14	19	.9	1.3	2.0	2.8	1.0	1.8	100	178	1,100	1,500	70	120
Eroded rolling phase	25	48	400	575	13	18	.8	1.2	1.8	2.6	.9	1.7	95	170	900	1,200	60	100
Memphis silt loam:																		
Rolling phase	32	63	450	700	16	22	1.0	1.5	2.2	3.5	1.2	1.8	80	180	1,200	1,600	65	150
Eroded rolling phase	30	56	430	625	15	20	.8	1.4	2.0	3.4	.9	1.7	75	170	1,000	1,300	60	125
Mountview silt loam:																		
Rolling shallow phase	16	38	260	375	12	17	.7	1.1	-----	2.2	-----	1.5	50	90	------	1,000	35	90
Eroded rolling shallow phase	15	35	250	350	10	15	.6	1.0	-----	2.0	-----	1.4	40	80	------	900	30	80

[1] "Cow-acre-days" is the number of days per year that 1 acre will graze 1 cow without injury to the pasture.

the game preserve. Some soils of this group are used for general crops and pasture, but many acres are left idle.

Corn, cotton, and lespedeza are the principal crops. Wheat, red clover, alfalfa, crimson clover, and soybeans are grown on a few acres. Usually there is no systematic rotation. On well-managed farms, however, row crops are usually followed by a small grain and hay. Hayland may be pastured for a year or so before being plowed again.

Commercial fertilizers are not consistently used. Usually they are used on row crops, and sometimes on small grains. Heavy farm equipment is used on many farms for these mildly sloping soils. On small farms or tenant farms, light animal-drawn implements are more common.

Very slight erosion takes place where these soils are wooded. A moderate amount of soil has already been lost from the cleared land. Many fields are not managed so as to protect them from erosion. Some of the better farmers use contour tillage, terracing, green-manure crops, and cover crops to control water and erosion.

On livestock farms many of these soils are kept in pasture. Such pastures are usually well managed. They are fertilized, and the weeds are mowed when necessary. Idle land is covered by a heavy stand of broomsedge and other weeds, vines, briers, and brush. This land is used occasionally for grazing, but the quality of the feed is low.

Suitable crops and rotations.—These soils are very well suited to most hay crops, especially alfalfa. They are also well suited to cotton, vetch, wheat, oats, red clover, lespedeza, whiteclover, soybeans, melons, and tree fruits. They are not so well suited to corn, tobacco, and truck crops as the soils of management group 4, but these crops can be grown. The Lexington-Ruston and the Mountview soils are generally less productive than other soils of this group.

The soils of this group cannot be used so intensively as those of management group 4. The rotation should be longer and include more close-growing crops. A row crop may be safely grown once every 4 to 6 years, if fertilization and other management practices are good. A winter cover crop such as crimson clover should follow all clean-cultivated crops. Grass should be grown periodically to help maintain the organic-matter content. Deep-rooted crops also help improve these soils. Rotations suggested for these soils are:

Corn, wheat, lespedeza, oats, lespedeza 2 years.
Cotton, soybeans, wheat, lespedeza 2 years.
Corn, wheat, red clover, and orchardgrass 3 or 4 years.
Corn, wheat, alfalfa 4 or 5 years.
Tobacco, wheat, red clover and grass 2 or 3 years.
Corn, wheat, red clover, cotton, crimson clover.
Permanent pasture.
Corn or cotton, rotation pasture 3 to 5 years.

If intensive water-control practices are used, these soils can safely support the same rotations as are given for the soils of management group 4.

Management requirements.—Good tilth is easily maintained on these soils if they are not eroded. The eroded areas can be tilled only within a narrow range of moisture content. The growing of grasses, deep-rooted legumes, and green-manure crops improves tilth. Fall

plowing may improve the tilth, but it may result in rapid runoff and erosion during winter.

Contour tillage should be used wherever possible to help conserve moisture and soil. Terraces may be advisable if outlets are available, fields are large enough, and the crop to be grown will make them worthwhile. If terraces are not practical (pl. 8, *B*), stripcropping may be good. In some places, if management of the soil is generally good, special engineering devices for water control are not necessary.

These soils need lime, phosphorus, and nitrogen for continued high yields of most crops. Lime and phosphorus are needed especially for legumes and grasses. Nitrogen is needed by all crops except the legumes. Most of the deep-rooted legumes and cotton need potassium. The other crops do not need potassium if it has been added to any crop on the soil in recent years. If grass is not included in the rotation, these soils will need green manure. The county agent can advise you about making soil tests and suggest the kinds and amounts of fertilizers that are needed.

These soils are very well suited to pasture. They are not so productive as the soils of management groups 3 or 4, because they are more droughty. Good pastures can be established without lime or phosphorus, but much better yields result if they are added.

On the more severely eroded spots it is difficult to establish pasture. Barnyard manure spread on such spots helps considerably. Nitrogen fertilizers give pasture plants a better start. After the pasture is established, the legumes in the stand should supply most of the nitrogen needed for high yields.

A mixture of orchardgrass with Ladino or whiteclover is well suited to these soils if a high fertility level is maintained. Redtop and lespedeza are easier to establish and maintain at low fertility levels. Grazing should be controlled, and weeds should be clipped when necessary.

MANAGEMENT GROUP 6—WELL-DRAINED FRIABLE ROLLING TERRACE AND UPLAND SOILS, SEVERELY ERODED

The soils of this group are poorly suited to crops but are fair to good pasture (table 12). All have been damaged considerably by erosion. All or nearly all of the original surface layer is gone, and, in some places, part of the subsoil. Many shallow and deep gullies have been cut.

These soils are moderately easy to work. They are friable and permeable to air, water, and roots. They hold a small amount of moisture for plants because their water-holding capacity has been greatly reduced by erosion. Rainfall flows rapidly over their 5 to 12 percent slopes and causes further erosion damage. The soils are moderately difficult to conserve.

Fertility is somewhat influenced by differences in depth of the soil profile and in the type of parent materials beneath the profile. All the soils, however, are low in productivity. Most of their organic matter and much of their plant nutrients have been washed away. The soils are strongly to very strongly acid.

A little gravel occurs in some of the Ruston and Brandon soils, but most soils of this group are free of gravel.

TABLE 12.—*Soils of management group 6 and expected yields for selected crops at two levels of management*

[Yields in columns A can be expected over a period of years at the prevailing level of management, as described in the text under *Present Use and Management*; yields in columns B can be expected under a high level of management such as is suggested under *Suitable Crops and Rotations* and *Management Requirements*; blank spaces indicate soil is not suitable for crop at the management level specified at the head of the column]

Soil	Cotton		Lespedeza		Pasture	
	A	B	A	B	A	B
	Lbs.	*Lbs.*	*Tons*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Brandon silty clay loam, severely eroded rolling phase	-----	325	0. 3	0. 5	25	50
Dexter silty clay loam, severely eroded rolling phase	-----	350	-----	. 5	30	55
Lexington silty clay loam, severely eroded rolling phase	-----	350	-----	. 5	25	55
Lexington-Ruston soils, severely eroded rolling phases	-----	-----	-----	. 4	20	50
Loring silty clay loam, severely eroded rolling phase	-----	350	-----	. 5	30	55
Memphis silty clay loam, severely eroded rolling phase	-----	400	-----	. 5	30	70

[1] "Cow-acre-days" is the number of days per year that 1 acre will graze 1 cow without injury to the pasture.

Present use and management.—All of these soils have been cleared and used for such crops as corn, cotton, and lespedeza. Many areas are now idle land or wasteland. A large part is in unimproved pasture. This native pasture is mostly a thin irregular stand of broomsedge, mixed with weeds and a few scattered patches of lespedeza. Many spots are bare or support a scanty stand.

Some farmers are reclaiming these areas for crops and pasture. This is usually done by terracing, use of lime and fertilizer, and seeding to a pasture mixture.

Suitable crops and rotations.—These soils are poorly suited to row crops, but corn and cotton can be grown occasionally. They are fairly well suited to small grains, pasture, and hay crops, especially the deep-rooted legumes. Lespedeza, bermudagrass, fescue, sericea, redtop, whiteclover, Ladino clover, and orchardgrass are good pasture plants for these soils.

Deep-rooted legume crops should be grown with grasses to improve the tilth and to help maintain organic matter and nitrogen in these soils. Alfalfa grown with orchardgrass and sericea lespedeza is suitable for this purpose. Green manure crops such as crimson clover, vetch, and sweetclover are also useful.

If a row crop must be grown on these soils, it should always be followed by a cover crop. Some suggested rotations are:

Permanent pasture of fescue and white or Ladino clover.
Pasture 4 or 5 years, corn.
Alfalfa and orchardgrass, corn.
Corn or cotton, small grain, alfalfa 4 years.

If these soils are kept in well-managed pasture long enough, the damage done by the severe erosion can be repaired to such extent that they can be used for crops again. Management would then be similar to that suggested for soils of group 5.

Management requirements.—The main management problems on these soils are improvement of the water-holding capacity, improvement of tilth, and control of runoff and erosion. Proper choice and rotation of crops, the addition of organic matter, and care in tillage are general requirements. Careful timing of seeding and tillage is important on these soils.

Good tilth is difficult to maintain. The soils should be cultivated as seldom as possible, and then only when the moisture conditions are just right. Organic matter added to the soil will help to improve the tilth.

Runoff must be controlled to prevent further damaging erosion. Contour tillage should be used wherever possible. A cover of close-growing crops should be kept on these soils as much as possible. If the soils are tilled in the fall, they should have cover crops to protect them during the winter and to supply organic matter when they are turned under in the spring. If suitable outlets for water are available, terracing is a good practice. Where terraces are not practical, strip-cropping may be a good idea. Diversion ditches, fills, and check dams may be necessary where the soils are already deeply gullied.

Any good management program for these soils will include the use of lime and fertilizers. The soils need more nitrogen and phosphorus for almost every crop. They also need potassium for legumes such as alfalfa. Organic matter is needed to improve the tilth and the water-absorbing capacity. Manure will do this and also supply plant nutrients. The county agricultural agent can advise what kinds and amounts of fertilizer, lime, and trace elements are currently suggested for rotations of crops grown on these soils.

If pasture is already well established on these soils, it needs only fertilization at intervals with lime and phosphorus and enough mowing to control weeds. Occasional reseeding of old pasture may be necessary. The seed can be applied when the fertilizer is spread. If enough fertilizer is applied, grazing is properly controlled, and weeds are regularly destroyed, reseeding should not be necessary. Pastures carefully managed probably will improve with age.

If pasture is not yet established, it may be difficult to manage the soils because of their severely eroded condition. They tend to clod and bake when not in proper moisture condition for cultivation. They also tend to become droughty and have very little organic matter. Addition of lime, phosphorus, potassium, and nitrogen will be necessary. Barnyard manure will help to establish plants on the more severely eroded spots.

Seeding of alfalfa or sericea on properly fertilized fields, grazing after they are well established, and seeding a pasture mixture on the stubble are considered good practices. A mixture of fescue or orchardgrass with whiteclover is suitable for these soils if they are properly fertilized.

MANAGEMENT GROUP 7—MODERATELY WELL DRAINED NEARLY LEVEL TO UNDULATING SILTPAN TERRACE AND UPLAND SOILS

The soils of this group are fair to good for crops and pasture (table 13). They are easy to work, moderately easy to conserve, and moderately productive of most crops. Slopes range from 2 to 5 percent.

These soils are friable. The upper layers are permeable to air, roots, and water, but the lower layers are only slightly permeable. The water-supplying capacity is moderate. The soils are low to medium in content of plant nutrients.

Present use and management.—About three-fourths of this group of soils is used for general farm crops and pasture. About 20 percent is idle and covered with broomsedge and other plants of little value for pasture. Nearly 5 percent of the acreages is covered by mixed hardwoods. All of the Paden soil is in the game preserve.

Corn, cotton, and lespedeza are the most common crops. Small grains, red clover, and grass hays are minor crops. Western dark fire-cured tobacco does very well on the Grenada soils. It is an important cash crop on those soils, and if properly managed, is of high grade.

No systematic rotation of crops is practiced on this management group. Corn or cotton may be followed by lespedeza for 2 years. Grain is usually grown after a tilled crop and before a legume or grass crop. The tobacco is usually grown in parts of larger fields without regard to crop rotations.

The amounts of fertilizers used vary. Ordinarily, too little is used. Corn and cotton receive moderate amounts of commercial fertilizers, commonly superphosphate. Tobacco is fertilized heavily with a complete fertilizer. The available stable manure is spread on land to be used for tilled crops. Only a few areas are limed consistently.

These soils are usually tilled on the contour. Erosion is not a serious problem, and few efforts are made to control it.

Suitable crops and rotations.—These soils are fairly well suited to corn, small grains, cotton, tobacco, sweetpotatoes, some vegetables, and to sericea lespedeza. They are moderately well suited to soybeans and grain sorghums.

These soils are not well suited to alfalfa. Heavy fertilization and liming are necessary to establish alfalfa or red clover, but it is hard to maintain stands, even under the best of management. Annual legumes do better on these soils than alfalfa. A suitable deep-rooted legume is sericea lespedeza.

These soils are somewhat droughty, but cotton and grain sorghum will tolerate some drought. Small grains, crimson clover, and vetch mature during seasons of high rainfall, so they are not affected much by this droughtiness. The fall-sown crops are more likely to be winterkilled on these soils than on those of management group 4.

The soils of this group require longer rotations than soils of management group 4, although their slopes are similar. If other management practices are good, these soils can be kept in a 3- to 4-year rotation. It is important that a cover crop follow all intertilled crops. Yields probably could be maintained under intensive use, as for

TABLE 13.—*Soils of management group 7 and expected yields for selected crops at two levels of management*

[Yields in columns A can be expected over a period of years at the prevailing level of management, as described in the text under *Present Use and Management;* yields in columns B can be expected under a high level of management such as is suggested under *Suitable Crops and Rotations* and *Management Requirements;* blank spaces indicate soil is not suitable for crop at the management level specified at the head of the column]

Soil	Corn		Cotton		Wheat		Lespedeza		Alfalfa		Red clover		Sweetpotatoes		Tobacco		Pasture	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
	Bu.	*Bu.*	*Lbs.*	*Lbs.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Bu.*	*Bu.*	*Lbs.*	*Lbs.*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Dulac silt loam:																		
Undulating phase	20	46	260	475	13	20	0.9	1.3				1.5	80	160	1,000	1,400	60	100
Eroded undulating phase	18	42	240	450	12	18	.8	1.2				1.4	75	150	900	1,300	50	90
Freeland silt loam:																		
Undulating phase	22	50	320	550	15	24	.9	1.5		2.2		1.7	85	175	1,200	1,600	65	120
Eroded undulating phase	20	45	300	500	14	22	.8	1.4		2.0		1.6	80	170	1,000	1,400	60	100
Level phase	22	52	325	550	14	23	.8	1.5		2.5		1.8	80	175	1,200	1,650	80	125
Grenada silt loam:																		
Undulating phase	20	52	375	575	13	19	.9	1.3			0.9	1.8	110	175	1,000	1,600	60	120
Eroded undulating phase	18	46	350	525	12	18	.8	1.2			.8	1.7	105	170	900	1,400	55	100
Level phase	22	55	385	575	14	20	.9	1.3			.9	1.8	130	175	950	1,650	60	125
Lax silt loam:																		
Undulating phase	20	46	240	450	12	18	.8	1.3				1.6	70	160	1,000	1,400	60	100
Eroded undulating phase	18	42	220	425	10	16	.7	1.2				1.4	60	150	900	1,300	50	90
Paden silt loam, eroded undulating phase	20	45	275	500	13	18	.9	1.2				1.7	75	175	1,000	1,400	80	100
Providence silt loam:																		
Undulating phase	25	50	325	550	14	20	.9	1.1		2.8	1.0	1.7	85	180	1,200	1,600	75	120
Eroded undulating phase	20	45	300	500	13	18	.8	1.0		2.6	.8	1.4	80	170	1,000	1,400	70	100
Tippah silt loam, eroded undulating phase	20	38	300	400	11	15	.8	1.0				1.4	70	150	800	1,000	50	80

[1] "Cow-acre-days" is the number of days per year that 1 acre will graze 1 cow without injury to the pasture.

example, cotton followed by a vetch winter cover crop for the areas not subject to erosion. Some good rotations for these soils follow:

Corn, wheat, lespedeza.
Corn, wheat, red clover, tobacco, crimson clover.
Corn, wheat, red clover and grass.
Tobacco, wheat, crimson clover.
Cotton, oats, lespedeza.
Corn or grain sorghum, Dixie crimson clover.
Sericea 3 or more years, corn, cotton.
Corn or grain sorghum, oats, crimson clover.

Cotton or potatoes can be substituted for corn in these rotations.

Management requirements.—It is very important that these soils be seeded and tilled at the proper times. They are extremely wet or extremely dry more often than soils of management group 4, and the range in moisture content at which they can be safely worked is narrower. This range is fairly wide, however, and good tilth is easy to maintain under good management.

There is some danger of erosion, but it should not be a serious problem. Contour tillage should be practiced whenever possible. Terraces and other engineering devices to control water are usually not necessary, but they may be advisable for some fields.

All of these soils need lime, phosphorus, nitrogen, and potassium for high yields of most crops. Some of the soils need considerably more of these elements than others. High fertility levels are difficult to maintain. The county agricultural agent can test the soils and suggest which fertilizers and what amounts of each are needed.

If legume crops are inoculated, they usually supply enough nitrogen for the crop that follows, especially if the legume is turned under. Properly conserved manure is a good source of nitrogen and potassium, but phosphorus should be added at the same time. Nitrogen fertilizer should be used as a topdressing for small grains or corn. A complete fertilizer is needed for truck crops and tobacco. All crops usually respond to phosphorus. Legume crops and cotton need potassium, and show improvement when it is used. The response to potassium is less predictable for other crops. It depends on how much potassium has been added to the same soil in previous years, and what crops have been grown since.

These soils are suited to pasture, but a good stand cannot be maintained without extra fertilizer. Pasture management requires a choice of suitable pasture plants and the addition of lime, phosphorus, and potassium. Grazing should be properly controlled. Pastures that are properly fertilized and grazed present no serious problem of weed control, but they do need to be mowed occasionally. When fertility is low, a mixture of lespedeza and a grass like redtop should be grown. When fertility is improved by amendments, a better quality pasture of orchardgrass or fescue mixed with white or Ladino clover can be established and maintained.

MANAGEMENT GROUP 8—MODERATELY WELL DRAINED ROLLING SILTPAN TERRACE AND UPLAND SOILS, NOT SEVERELY ERODED

This is a group of moderately productive crop and pasture soils on 5- to 12-percent slopes (table 14). They are like the soils of management group 7 except that they have stronger slopes.

TABLE 14.—*Soils of management group 8 and expected yields for selected crops at two levels of management*

[Yields in columns A can be expected over a period of years at the prevailing level of management, as described in the text under *Present Use and Management*; yields in columns B can be expected under a high level of management such as is suggested under *Suitable Crops and Rotations* and *Management Requirements*; blank spaces indicate soil is not suitable for crop at the management level specified at the head of the column]

Soil	Corn		Cotton		Wheat		Lespedeza		Alfalfa		Red clover		Sweet-potatoes		Tobacco		Pasture	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
	Bu.	*Bu.*	*Lbs.*	*Lbs.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Bu.*	*Bu.*	*Lbs.*	*Lbs.*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Dulac silt loam:																		
Rolling phase	18	42	240	450	12	18	0.8	1.3	-----	-----	-----	1.5	80	160	800	1,200	50	90
Eroded rolling phase	16	38	220	380	10	15	.7	1.2	-----	-----	-----	1.4	70	140	750	1,000	45	80
Freeland silt loam:																		
Rolling phase	20	45	300	500	14	22	.8	1.4	-----	2.0	-----	1.6	80	170	950	1,300	60	100
Eroded rolling phase	18	40	275	425	13	20	.7	1.3	-----	1.8	-----	1.4	60	150	900	1,100	55	90
Lax silt loam, rolling phase	18	42	220	425	10	17	.7	1.3	-----	-----	-----	1.4	70	160	900	1,200	50	90
Paden silt loam:																		
Rolling phase	20	45	275	500	12	16	.9	1.2	-----	-----	-----	1.5	70	160	900	1,300	80	100
Eroded rolling phase	18	40	260	425	10	15	.8	1.0	-----	-----	0.6	1.4	70	150	800	1,100	75	90
Providence silt loam:																		
Rolling phase	20	45	300	500	13	19	.8	1.1	-----	2.6	.8	1.4	80	175	900	1,300	70	100
Eroded rolling phase	16	40	265	400	----	12	.7	1.0	-----	2.4	.5	1.2	60	140	800	1,100	60	85
Tippah silt loam:																		
Rolling phase	20	38	300	400	11	15	.8	1.1	-----	-----	-----	1.3	75	160	750	1,000	50	80
Eroded rolling phase	16	34	250	340	10	14	.7	1.0	-----	-----	-----	1.0	60	130	------	900	40	70

[1] "Cow-acre-days" is the number of days per year that 1 acre will graze 1 cow without injury to the pasture.

A siltpan in the lower subsoil is characteristic of these soils. This siltpan impedes the internal drainage. The layers above the siltpan are friable and permeable to air, water, and roots. However, water stands above the siltpan for much of the year, and this water restricts the circulation of air and the growth of roots.

The soils of this group vary in depth and in composition of the material beneath the profile. They are all moderately easy to work, and almost free of stones, gravel, and gritty material.

These soils are low to medium in general productivity. They have little organic matter, and they are deficient in plant nutrients. They are strongly acid unless they have been limed recently.

Unless protected by some kind of plant covering, these soils are easily eroded. The cultivated areas have already lost some soil material through erosion.

Present use and management.—This management group covers only about 3 percent of the county. About half of this is now wooded. Much of the remainder is idle and covered with weeds of little value for pasture. The Paden soils are in the game refuge.

Some soils of this group are cultivated along with adjoining less sloping areas. Corn, cotton, and lespedeza are the usual crops. A few acres are used for pasture, small grains, and minor crops. Most of the farmers follow no systematic rotation. Corn or cotton is generally followed by lespedeza, but a small-grain crop may be grown in the sequence. Sometimes, but not often, a green-manure crop is grown and plowed under before a tilled crop.

Corn or cotton receives a moderate application of a commercial fertilizer, usually superphosphate. Cotton may also receive some potassium fertilizer. Few acres are limed regularly.

Contour tillage is common, but terraces and other special practices to conserve water and control erosion are not generally used. Hayfields are pastured for several years, but receive no special treatment to maintain or increase yields.

Suitable crops and rotations.—Soils of this group are fairly well suited to corn, small grains, cotton, lespedeza, and some vegetable crops. Red clover can be grown if it is properly fertilized. The soils are fairly well suited to pasture.

If a proper water-control system were followed on these soils, they could be used in the same rotations as those suggested for management group 7. However, the slopes are stronger and the danger of erosion is greater on these soils. They need longer rotations that include more close-growing crops. It is important that a cover crop follow all intertilled crops. Suitable rotations for these soils are:

Corn, wheat, grass and legume mixture for 3 or 4 years.
Corn, wheat, lespedeza, oats and lespedeza for 2 years.
Cotton, soybeans, wheat, lespedeza 2 years.
Cotton, small grain, red clover and grass for 3 or 4 years.
Corn, small grain, crimson clover, small grain.

Cotton, soybeans, or sorghum can be substituted for the corn in rotations. Vetch and crimson clover can be planted between rows of cotton for winter cover and to provide green manure.

Management requirements.—Good tilth is easily maintained on these soils. Tillage can be done over a fairly wide range of moisture

content. All tillage should be on the contour, and stripcropping may be advisable on the long slopes. Proper timing of seeding and tillage is important.

Control of runoff and erosion should not be a serious problem if long rotations are used and enough fertilizer is added. Contour tillage and stripcropping may be enough to conserve the soils. If shorter rotations are used, terraces or other engineering practices may be necessary. Most of these soils have regular slopes that are suited to terrace construction. The slow internal drainage of the soils makes proper design of terraces very important. Suitable outlets for excess water must be provided for terraces.

These soils need the same fertilizers as the soils of management group 7, but it will take more fertilizer to get the same yields. Lime, phosphorus, potassium, and nitrogen are needed for high yields of most crops. The soils vary considerably in their supply of these elements. The county agricultural agent can advise you about testing the soils and can suggest specific amounts and kinds of fertilizer.

When legume crops have been inoculated, they usually supply enough nitrogen for the next crop in the rotation. Heavy applications of a complete fertilizer are needed for truck crops and potatoes.

These soils are suited to pasture, but they need moderate to large amounts of lime and phosphorus and some potassium to produce high yields. Nitrogen will probably be needed to establish a pasture stand. Good management also requires proper control of grazing and occasional mowing of the weeds. A mixture of white or Ladino clover and orchardgrass can be grown if well fertilized. Lespedeza and redtop are better if the soils are at a low level of fertility.

MANAGEMENT GROUP 9—MODERATELY WELL DRAINED ROLLING SILTPAN TERRACE AND UPLAND SOILS, SEVERELY ERODED

Soils of this group are poor for crops and poor to fair for pastures (table 15). Severe erosion has removed most, or all, of the former plow layer and part of the subsoil. Shallow and deep gullies interfere with tillage.

The siltpan or compact layer in the lower subsoil restricts internal drainage, aeration, and the normal development of roots. The layers above the siltpan are readily permeable to air, water, and roots. However, the thickness of these layers has been so reduced by erosion that the soil has little water-supplying capacity left. The soils absorb less water, and most of the rainfall runs off rapidly.

Most of the organic matter has been washed away, and a large part of the mineral plant nutrients. The deeper soils are generally somewhat more fertile than the shallow soils.

Present use and management.—All of these soils are cleared and formerly produced corn, cotton, lespedeza, and general crops. Now all are idle or in unimproved pasture. Most areas are neglected entirely. All of the Paden soil is in the game preserve.

A few small areas that are less eroded are sometimes used for corn, cotton, or lespedeza, but yields are very low. These areas receive no special treatment other than small applications of commercial fertilizer.

TABLE 15.—*Soils of management group 9 and expected yields for selected crops at two levels of management*

[Yields in columns A can be expected over a period of years at the prevailing level of management, as described in the text under *Present Use and Management;* yields in columns B can be expected under a high level of management such as is suggested under *Suitable Crops and Rotations* and *Management Requirements;* blank space indicates soil is not suitable for crop at the management level specified at the head of the column]

Soil	Lespedeza		Pasture	
	A	B	A	B
	Tons	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Dulac silty clay loam, severely eroded rolling phase	0.3	0.5	15	40
Freeland silty clay loam, severely eroded rolling phase	.3	.6	20	45
Lax silty clay loam, severely eroded rolling phase	.3	.5	15	40
Paden silty clay loam, severely eroded rolling phase	.3	.6	20	45
Providence silty clay loam, severely eroded rolling phase	.3	.6	15	40
Tippah silty clay loam, severely eroded rolling phase	------	.5	20	35

[1] "Cow-acre-days" is the number of days per year that 1 acre will graze 1 cow without injury to the pasture.

The pastures on this soil are very poor. The stand is chiefly weeds, vines, broomsedge, and other native plants, and a few small patches of lespedeza.

Suitable crops and rotations.—The low fertility, very low water-supplying capacity, and danger of further erosion make these soils unsuitable for intertilled crops. Cotton, which is drought-resistant, and small grains, which mature during the wetter season, do better than most other crops except pasture.

Semipermanent hay crops and pasture produce low yields but are as good a use for these soils as any other. Alfalfa does not do well, but another deep-rooted legume, sericea lespedeza, is very good for reclaiming these areas. Bermudagrass and fescue are suitable crops. After a few years as a well-managed pasture, these soils may be so improved in organic-matter content and productivity that they can be used occasionally for row crops. They would then be managed as suggested for management group 8. A row crop should always be followed by a cover crop on these soils.

Suitable plans for cropping these soils follow.

Permanent pasture.
Whiteclover and fescue.
Bermudagrass and Dixie crimson clover.
Sericea.
Small grain, sericea.
Small grain, whiteclover and fescue 4 or 5 years.

Red clover, sericea lespedeza, crimson clover, and vetch are all useful for improving the tilth of these soils and adding organic matter and nitrogen.

Management requirements.—The depth of the profile, the thickness and compactness of the siltpan, and the type of material beneath the siltpan determine the response that can be expected from good management. These soils are more exacting in their management requirements than those of management group 12. They are difficult to work and to conserve. They are more droughty and much lower in fertility, and they are suited to fewer crops. Fertilization, erosion control, and timing of practices are very important.

Contour tillage should be practiced wherever possible on soils of this management group. Stripcropping is advisable on longer slopes. On uniform slopes that have suitable terrace outlets, terraces may be practical. Diversion ditches and check dams in gullies help to stop erosion. Proper rotation of crops and the addition of organic matter will help to improve tilth and control runoff and erosion.

These soils are deficient in lime, nitrogen, phosphorus, potassium, and organic matter. A good management program will include application of all of these amendments. See the county agricultural agent about testing your soil for plant nutrients. He can also recommend kinds and amounts of fertilizer to be used.

Established pastures need regular liming and fertilizing. They should be mowed occasionally to control weeds. Grazing should be regulated so that the pasture can improve.

Establishment of new pasture on these soils is difficult because of the rapid runoff, poor tilth, tendency to clod and bake, lack of organic matter, and droughtiness. Lime, phosphorus, potassium, and nitrogen fertilizers will be necessary to start the plants. Barnyard manure is very helpful on the more severely eroded spots.

At high fertility levels, whiteclover and fescue or orchardgrass would be a good pasture mixture. At lower fertility levels, bermudagrass would conserve the soil, but would produce less desirable forage.

MANAGEMENT GROUP 10—IMPERFECTLY DRAINED LEVEL TO UNDULATING SILTPAN TERRACE AND UPLAND SOILS

Soils in this group are poor to fair for crops and pasture (table 16). They are easy to work, moderately difficult to conserve, and low to moderately low in productivity of most crops.

A compact layer or hardpan is typical of these soils. A moderately high water table forms above the hardpan during rainy periods. This reduces aeration and restricts root development. The slow internal drainage makes these soils wet and cold until very late in spring. The limited amount of permeable soil above the hardpan has a low water-supplying capacity. The soils are very wet during some seasons of the year, and at other seasons they are too dry.

The soils are low in lime, organic matter, and plant nutrients. Most of them have no gravel, but do have a few small rounded concretions.

Present use and management.—Much of this soil is cleared. Most of it is idle or in pasture. Corn and lespedeza are most commonly grown, but a few acres produce sorghum, soybeans, and redtop. Average yields are low, and sometimes crops fail completely.

The parts of these soils farmed are usually next to better drained soils and are managed along with them. No special efforts are made

TABLE 16.—*Soils of management group 10 and expected yields for selected crops at two levels of management*

[Yields in columns A can be expected over a period of years at the prevailing level of management, as described in the text under *Present Use and Management;* yields in columns B can be expected under a high level of management such as is suggested under *Suitable Crops and Rotations* and *Management Requirements;* blank spaces indicate soil is not suitable for crop at the management level specified at the head of the column]

Soil	Corn		Cotton		Wheat		Lespedeza		Red clover		Tobacco		Pasture	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
	Bu.	*Bu.*	*Lbs.*	*Lbs.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Lbs.*	*Lbs.*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Calloway silt loam:														
Level phase	14	36		250		12	0.8	1.2				1,000	50	95
Undulating phase	18	36	200	300		15	.7	1.1				1,000	50	95
Eroded undulating phase	15	32	180	275		14	.7	1.0				850	40	75
Center silt loam:														
Level phase	18	42		275		12	.8	1.2		1.8		1,200	50	125
Undulating phase	22	42	220	350		15	.8	1.1		1.8		1,200	65	120
Eroded undulating phase	20	35	200	325		14	.8	1.0		1.6		1,000	60	100
Hatchie sil. loam:														
Level phase	18	35		275		12	.6	1.2				1,000	45	95
Undulating phase	18	35		350		13	.5	1.1				1,000	45	90
Eroded undulating phase	16	32		325		12	.5	1.0				850	45	80
Hatchie fine sandy loam:														
Level phase	12	32		300		10	.5	.8				1,000	40	85
Undulating phase	12	32		350		12	.5	.8				1,000	30	85
Taft silt loam	15	35		300		12	.7	1.0				900	50	90

[1] "Cow-acre-days" is the number of days per year that 1 acre will graze 1 cow without injury to the pasture.

to improve drainage. There is no systematic crop rotation. Not enough fertilizer is used. Corn receives moderate applications of commercial fertilizers and stable manure, but grain or hay crops usually are not fertilized. No special management is used to maintain or improve the pastures.

Suitable crops and rotations.—These soils are not well suited to tilled crops, because they have imperfect drainage, low fertility, and a low water-supply capacity. Sorghum (pl. 3, *A*), soybeans, lespedeza, and other summer-annual crops can be grown without artificial drainage, but yields are very low if no fertilizer is used. Cotton and tobacco do very poorly on these soils. Corn can be grown.

Pasture is probably a better use for these soils than any other, but even pasture yields are low. Whiteclover, alsike clover, redtop, and fescue are pasture plants that will do fairly well if properly fertilized.

Artificial drainage would increase the number of crops that could be grown. About the same crops as can be grown on the soils of management group 7 would be suitable for soils of this group if they were properly drained.

If drainage were improved, lime and fertilizer were supplied, and crops that could stand alternately wet and dry conditions were planted, these soils could be conserved by growing a row crop once in every 3 years. Some suitable rotations would be:

Corn, lespedeza.
Corn, pasture 2 or more years.
Pasture of fescue and whiteclover.
Corn, soybeans, lespedeza

A cane crop or soybeans can be substituted for the corn, and whiteclover for the lespedeza. Sericea would be a good legume in the longer crop rotations.

Management requirements.—Tillage of these soils is easy, but it may be late in the spring before the soil is dry enough to start operations. Proper timing of seeding and tillage is very important.

None of these soils are likely to erode. Drainage is necessary before many crops can be grown. Open ditches, bedding, row direction, and diversion ditches are all practices that may improve the drainage. Tilling probably would not be effective because the hardpan layer is impermeable. The Center soils might possibly be improved by tiling.

High fertility levels are hard to maintain. Addition of lime will benefit all crops, and legumes cannot be grown without it. The soils also need phosphorus, potassium, and nitrogen. Properly inoculated legumes and legume-grass mixtures for hay or pasture do not need extra nitrogen, but should have phosphorus and potassium. Corn needs a complete fertilizer. Specific amounts and kinds of fertilizers can be recommended for each soil by the county agricultural agent.

These soils are fairly well suited to pasture. They do not supply good grazing during the dry spells of summer and fall because they are too droughty. Liming and complete fertilization are necessary to establish a good pasture. Whiteclover and fescue, if well fertilized,

produce a high yield. Redtop and lespedeza are a better mixture for fields that are not well fertilized. It will be necessary to clip the weeds periodically.

MANAGEMENT GROUP 11—WELL-DRAINED FRIABLE HILLY TERRACE AND UPLAND SOILS, NONCHERTY OR GRAVELLY AND NOT SEVERELY ERODED

This group consists of soils poor to fair for crops and fair to good for pasture (table 17). They are moderately productive, but their hilly relief, long slopes, and extreme erodibility make them unsuitable for tilled crops. They are suitable for pasture.

The soils are moderately easy to work because they are friable and readily permeable to roots, air, and moisture. However, the steep slopes make the use of heavy equipment impractical. The water-supplying capacity is moderate for all except the Ruston soils. The Ruston soils are sandy and porous, and water percolates rapidly through them.

The soils of management group 11 have low supplies of organic matter and plant nutrients. They are acid in reaction. It is moderately difficult to conserve these soils.

Present use and management.—About 50 square miles of the county is in this management group, but about 83 percent of the group is woodland. The trees are mixed hardwoods, mostly oak and hickory. Most of the sawtimber is gone, but some cutting of firewood, rough lumber, and fenceposts is done.

Cleared areas were once cultivated to corn, cotton, lespedeza, or other crops. Most of them are now idle or in unimproved pasture. The native vegetation of broomsedge, weeds, briers, and other native plants has poor forage value. Few of the pastured areas receive any special management for their upkeep or improvement.

The few areas now farmed are chiefly narrow, irregular strips on the upper parts of slopes. Usually these are included within the boundaries of fields containing less sloping soils. The slopes are cropped, fertilized, and managed like the rest of the field. Corn, cotton, small grains, and lespedeza are the most common crops.

Suitable crops and rotations.—These soils would be suited to most crops of the county, but the strong slopes and danger of erosion make it inadvisable to grow row crops oftener than once in 6 or 8 years. Pasture is the best use for these soils on many farms. Permanent pasture of orchardgrass, fescue, red clover, whiteclover, Ladino clover, or lespedeza would be suitable. The soils are fairly well suited to crimson clover, red clover, and the small grains. Crops sensitive to drought should not be grown on them.

Long rotations that consist chiefly of close-growing crops are appropriate for these soils. Some suggested rotations are:

Permanent pasture of orchardgrass and white or Ladino clover.
Corn or cotton, wheat, pasture 4 or 5 years.
Corn, alfalfa and orchardgrass.
Corn, small grain, clover, clover and grass pasture 3 or 4 years.
Cotton, oats and vetch, lespedeza and grass pasture 3 or 4 years.

Any of the commonly grown row crops can be substituted for corn or cotton in these rotations. Probably most areas of these soils now wooded should be kept that way; they will provide the wood products required on the farm.

TABLE 17.—*Soils of management group 11 and expected yields for selected crops at two levels of management*

[Yields in columns A can be expected over a period of years at the prevailing level of management, as described in the text under *Present Use and Management;* yields in columns B can be expected under a high level of management such as is suggested under *Suitable Crops and Rotations* and *Management Requirements;* blank spaces indicate soil is not suitable for crop at the management level specified at the head of the column]

Soil	Corn		Cotton		Wheat		Lespedeza		Alfalfa		Red clover		Pasture	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
	Bu.	*Bu.*	*Lbs.*	*Lbs.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Dexter fine sandy loam, hilly phase	-----	42	------	450	-----	16	------	1. 0	------	2. 8	------	1. 4	------	90
Lexington silt loam:														
Hilly phase	-----	50	------	450	-----	15	------	1. 2	------	2. 8	------	1. 4	65	110
Eroded hilly phase	-----	45	------	400	-----	14	0. 8	1. 0	1. 8	2. 6	0. 8	1. 3	60	90
Lexington-Ruston soils:														
Hilly phases	-----	42	------	380	-----	13	------	1. 2	------	2. 6	------	1. 4	------	85
Eroded hilly phases	-----	40	------	375	-----	-----	. 7	. 9	------	2. 4	------	1. 3	25	70

[1] "Cow-acre-days" is the number of days per year that 1 acre will graze 1 cow without injury to the pasture.

Management requirements.—If used for crops, these soils are quite exacting in management requirements. Contour tillage and strip-cropping are necessary. Applying enough fertilizer and lime to maintain a good sod will help to conserve the soils between years of row cropping. Diversion ditches will help control erosion.

All of these soils need lime, phosphorus, and nitrogen for high yields of most crops. Alfalfa, red clover, and other legumes need lime, phosphorus, and potassium. If properly inoculated, these crops supply enough nitrogen for their own growth and enough nitrogen for the crop immediately following in the rotation. Almost all crops respond well to fertilizers containing phosphorus. Legumes, cotton, and some other crops require potassium for good yields. Your county agricultural agent can tell you what kinds and amounts of fertilizer are needed for each soil.

These are fair to good soils for pasture. Moderate to heavy applications of lime, phosphorus, and potassium are generally required to establish and maintain good pastures. Nitrogen is needed while the pasture is being established. Grazing should be controlled, and weeds should be mowed. A mixture of orchardgrass or fescue with white or Ladino clover is well suited to these soils.

MANAGEMENT GROUP 12—POORLY DRAINED NEARLY LEVEL TERRACE AND UPLAND SOILS

Without artificial drainage these soils are poor for pasture and very poor for crops (table 18). The water table is at or near the surface most of the time. Most of these soils lie in slightly depressed positions and are ponded for much of the year. In most places they have a hardpan layer.

TABLE 18.—*Soils of management group 12 and expected yields for selected crops at two levels of management*

[Yields in columns A can be expected over a period of years at the prevailing level of management, as described in the text under *Present Use and Management;* yields in columns B can be expected under a high level of management such as is suggested under *Suitable Crops and Rotations* and *Management Requirements;* blank spaces indicate soil is not suitable for crop at the management level specified at the head of the column]

Soil	Corn		Lespedeza		Pasture	
	A	B	A	B	A	B
	Bu.	*Bu.*	*Tons*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Almo silt loam	15	30	0.4	0.8	25	70
Henry silt loam	10	30	.5	.7	25	70
Robertsville silt loam	------	35	------	.8	------	75
Routon and Henry silt loams	15	35	.4	.7	30	90

[1] "Cow-acre-days" is the number of days per year that 1 acre will graze 1 cow without injury to the pasture.

The layers above the hardpan are friable and permeable. The soils are moderately easy to work at the proper moisture content. The water usually standing in the soil restricts any circulation of air.

Root systems spread out near the surface and never go down very far. Although the soils are saturated much of the time, their water-supplying capacity is low, and crops are severely damaged by droughts.

There is no gravel or gritty material in the soils, but some rounded concretions are present in all layers, and they are quite abundant in parts of the subsoils. These light-gray or ashy colored soils are very low in organic-matter content and lime, and very deficient in plant nutrients.

Present use and management.—About 60 percent of this group of soils is in woodland. About 12 percent is farmed to corn, lespedeza, and minor crops such as small grains. The rest of the soil is idle or is used for pasture. A large part of the pasture is weeds and sedges and other water-tolerant vegetation. The value for forage varies but is usually very low.

The farmed areas of these soils are usually part of fields made up mainly of associated better drained soils, and they receive the same management. Sometimes excess surface water is removed by shallow ditches or deep furrows.

Little lime is spread on these soils. An occasional green-manure crop is plowed under to supply organic matter. The corn crop is usually followed by hay or pasture, but sometimes by small grain. Corn receives superphosphate, but little or no fertilizer is applied to small grains.

Suitable crops and rotations.—When they are not drained, these soils are very poorly suited to tilled crops. Drainage of these soils would be extremely difficult. Even if they were drained, they would still be poorly suited to tilled crops because of their low water-supplying capacity and the low content of plant nutrients and organic matter.

The soils are considered suitable for pasture, even though their productivity of pasture plants is very low. Lespedeza, soybeans, sorghum, fescue, alsike clover, and whiteclover can be grown, especially after drainage has been improved. A pasture of fescue and whiteclover is suggested for these soils.

Management requirements.—Some tilled crops can be grown on these soils if they are drained and fertilized. Drainage and fertilization are expensive, however, and yields would still be low.

These soils furnish some poor-quality pasture in spring, summer, and fall. Pastures can be improved by drainage and fertilization. Open ditches, bedding, and diversion ditches will usually improve the drainage. Tiling is not effective in most places.

After drainage has been improved, pastures of fescue and whiteclover, or of redtop and lespedeza, will do fairly well if lime, phosphorus, and potassium are added. The county agricultural agent can advise about kinds and amounts of fertilizer that are best for these soils. Weeds in the pasture should be controlled by grazing and mowing.

Many acres of these soils are now wooded. They should not be cleared. Many areas now cleared should be allowed to go back to forest.

MANAGEMENT GROUP 13—POORLY DRAINED FRIABLE NEARLY LEVEL ALLUVIAL AND GENTLY SLOPING COLLUVIAL SOILS

Soils of this group are poorly suited to crops (table 19). They are poor to good for pasture. All are poorly drained, and all except the Dyer soils are on stream bottoms where they are regularly flooded. The Dyer soils are on colluvium that is not usually flooded, but they receive seepage water from slopes above them.

TABLE 19.—*Soils of management group 13 and expected yields for selected crops at two levels of management*

[Yields in columns A can be expected over a period of years at the prevailing level of management, as described in the text under *Present Use and Management;* yields in columns B can be expected under a high level of management such as is suggested under *Suitable Crops and Rotations* and *Management Requirements;* blank spaces indicate soil is not suitable for crop at the management level specified at the head of the column]

Soil	Corn		Lespedeza		Pasture	
	A	B	A	B	A	B
	Bu.	*Bu.*	*Tons*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Beechy silt loam	20	42	0.5	1.2	55	130
Swamp phase				.8		75
Beechy fine sandy loam	20	40	.4	1.0	50	120
Beechy loamy sand, overwash phase		30		.6	10	75
Dyer silt loam	20	40	.5	.8	75	120
Dyer fine sandy loam	18	35	.4	.7	70	100
Melvin and Beechy silt loams		40	.4	.9	50	125

[1] "Cow-acre-days" is the number of days per year that 1 acre will graze 1 cow without injury to the pasture.

The soils of management group 13 differ from the soils of management group 11 chiefly in being friable and permeable throughout the profile. They have no hardpans. Although their materials are permeable to air, water, and roots, a high water table limits the circulation of air and causes root systems to develop in a thin zone near the surface. These soils are easy to work when moisture conditions are right, but they are moderately difficult to conserve. Their water-supplying capacity is high to very high.

These are light-colored grayish soils. Most of them are low in fertility and in organic matter. The Melvin soil is medium to strongly acid; the others are all strongly to very strongly acid.

Present use and management.—About 51.5 square miles of these soils was mapped, but almost one-third of this was flooded when Kentucky Reservoir was filled. All of the Melvin soil and nearly all of the swamp phase of Beechy silt loam were thus taken out of the acreage of farm land. Areas next to the reservoir are now included in the game preserve. Woodland covers 70 percent or more of the remaining acreage in this management group.

A few acres produce corn, lespedeza, or miscellaneous crops, but most of the cleared land is used for hay or pasture. The quantity of

pasture during spring, summer, and fall is fair, but the quality is only poor to fair. A considerable part of these soils is idle.

Drainage of some areas has been improved by open ditches. Fertilizers and systematic crop rotations are not commonly used. Corn yields are moderately good in dry seasons, but failures are common in wet seasons. Pastures receive no special treatment for improvement, and they have low feeding value.

Suitable crops and rotations.—Most tilled crops are poorly suited to these soils, but those crops that can be planted in late spring or early summer and harvested in the fall may be fairly well suited. Soybeans and sorghum can be grown in this way.

Pasture is considered the most suitable use for these soils. White or Ladino clover and fescue pastures are suggested. Rotations suggested for use if the soils are not artificially drained are:

Permanent pasture.
Sorghum, soybeans, lespedeza 2 years.

If these soils were adequately drained, they would be suited to tilled crops, and their use and management would be similar to those of the imperfectly drained soils of management group 2. Some rotations that would then be appropriate are:

Corn, lespedeza 2 years.
Corn, pasture 2 or more years.

Management requirements.—Drainage is the first requirement in managing these soils. They would be moderately productive if drained. Open ditches, bedding, and diversion ditches would be effective in most places, and tiling could probably be used. Pasture of fescue and whiteclover or of redtop and lespedeza would do fairly well, but the pasture would be of higher quality if lime and phosphorus were added. Highly productive pastures of whiteclover or whiteclover and fescue can be developed on drained areas if the proper amendments are applied. Weeds should be controlled by grazing and mowing.

For specific information on the kinds and amounts of fertilizers needed for these soils, see the county agricultural agent.

MANAGEMENT GROUP 14—WELL-DRAINED TO EXCESSIVELY DRAINED FRIABLE CHERTY, GRAVELLY, AND SANDY ROLLING TO HILLY UPLAND SOILS AND SEVERELY ERODED SILTY HILLY UPLAND SOILS

Soils of this group are poor for crops and poor to fair for pasture (table 20). Most of them are hilly, but a few are rolling. They are generally low in productivity. All of these soils are strongly to very strongly acid, low in organic-matter content, and deficient in plant nutrients.

The water-supplying capacity of these soils is low to medium. They are friable to very friable. Their permeability to air, roots, and water is good to very good. The moderately steep slopes and the chert and gravel make most areas difficult to work and to conserve.

The Guin, Bodine, and Ruston soils are droughty because of excessive internal drainage. The chert in Bodine soils and the gravel in Guin and Ruston soils somewhat hinder tillage. The Lexington soils in this management group have been severely injured by erosion.

TABLE 20.—*Soils of management group 14 and expected yields for selected crops at two levels of management*

[Yields in columns A can be expected over a period of years at the prevailing level of management, as described in the text under *Present Use and Management;* yields in columns B can be expected under a high level of management such as is suggested under *Suitable Crops and Rotations* and *Management Requirements;* blank spaces indicate soil is not suitable for crop at the management level specified at the head of the column]

Soil	Corn		Cotton		Wheat		Lespedeza		Alfalfa		Red clover		Sweetpotatoes		Tobacco		Pasture	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
	Bu.	*Bu.*	*Lbs.*	*Lbs.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Bu.*	*Bu.*	*Lbs.*	*Lbs.*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Bodine cherty silt loam:																		
Hilly phase	----	----	----	----	----	----	----	0.8	----	----	----	----	----	----	----	----	----	50
Eroded hilly phase	----	----	----	----	----	----	----	.8	----	----	----	----	----	----	----	----	20	50
Rolling phase	15	35	200	300	8	14	0.5	.8	----	2.0	----	1.4	----	----	----	800	----	55
Guin-Brandon soils:																		
Hilly phases	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	50
Eroded hilly phases	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	20	50
Rolling phases	16	38	155	350	10	14	.5	.8	----	----	----	1.3	40	60	----	950	25	60
Eroded rolling phases	15	35	150	325	8	12	.4	.7	----	----	----	1.2	30	50	----	900	20	55
Lexington silty clay loam, severely eroded hilly phase	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	25	45
Lexington-Ruston soils, severely eroded hilly phases	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Mountview silt loam, hilly shallow phase	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	75
Ruston fine sandy loam:																		
Hilly phase	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Eroded hilly phase	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Rolling phase	20	40	240	400	----	10	.4	.6	----	----	----	----	----	----	----	800	45	80
Eroded rolling phase	18	35	220	325	----	----	.4	.5	----	----	----	----	----	----	----	750	40	75

[1] "Cow-acre-days" is the number of days per year that 1 acre will graze 1 cow without injury to the pasture.

Present use and management.—About 68 square miles of land is in this management group. Nearly half is wooded. A few acres have been flooded by the Kentucky Reservoir since they were surveyed, and about 2 square miles are included in the game preserve around the reservoir. Nearly all of the cleared areas are idle.

The few acres of these soils that are used for crops are usually edges of fields of more suitable cropping soils. They are cropped and managed according to the practices used on the main part of the field. Corn, cotton, small grains, and lespedeza are the principal crops grown.

Some areas are pastured occasionally, but the quantity and quality of the forage is low. The vegetation is mostly broomsedge, but also weeds, vines, native plants, and small scattered patches of wild plum, sumac, sassafras, and persimmon. The more seriously eroded spots are nearly bare of plant cover. No particular care is taken to maintain or improve these pastures.

Suitable crops and rotations.—These soils are poorly suited to tilled crops. Each soil has one or several of such unfavorable characteristics as large amounts of chert or gravel, strong slopes, low fertility, low water-supplying capacity, poor tilth, or extreme danger of erosion.

Permanent pasture is probably the best use for these soils on most farms. If properly fertilized, the soils are suited to such crops as meadow fescue, orchardgrass, bermudagrass, Ladino clover, white-clover, red clover, and lespedeza. A mixture of clover and fescue or orchardgrass would be good for permanent pasture.

The soils that are already wooded can best be used for timber production. The Bodine soils probably should be used entirely for forest.

Management requirements.—If circumstances make it necessary to use any of these soils for crops, a very high level of management must be used to conserve the soil. The rotation should be as long as 6 or 8 years and should consist chiefly of close-growing crops. Enough fertilizer should be used to keep all crops growing so vigorously they will maintain a good sod. Contour tillage and perhaps stripcropping are advisable.

Although these soils are not naturally productive of pasture, good pasture can be established and maintained by proper management. Lime, phosphorus, and, on some soils, potassium will be needed to start the pasture. Nitrogen may also be necessary. The county agricultural agent can help you test your soil and decide what fertilizers are needed and how much to use. After a good pasture has been established, periodic additions of lime and phosphorus and occasional reseeding will be necessary. Grazing should be carefully controlled to maintain a good sod at all times. The weeds should be clipped, but this will be difficult because of stones.

When these soils are used for timber, the forest should be protected against grazing and burning over. Other forest management practices that should be followed are discussed in the section, Forests.

MANAGEMENT GROUP 15—MODERATELY WELL DRAINED HILLY SOILS, WELL DRAINED TO EXCESSIVELY DRAINED CHERTY, GRAVELLY, OR SANDY HILLY AND STEEP UPLAND SOILS AND MISCELLANEOUS LAND TYPES

Each of the soils of this management group has some characteristic or combination of characteristics that makes it almost impossible to use it for crops or pasture (table 21). The steepest uplands of the county are in this group. Most slopes range from 12 to 25 percent, but some are 60 percent or more. The Bodine soils have many fragments of chert on the surface and in the soil layers. The Guin soils have gravel all through them. Some soils have been severely injured by erosion.

TABLE 21.—*Soils of management group 15 and expected yields of lespedeza and pasture at two levels of management*

[Yields in columns A can be expected over a period of years at the prevailing level of management, as described in the text under *Present Use and Management;* yields in columns B can be expected under a high level of management such as is suggested under *Suitable Crops and Rotations* and *Management Requirements;* blank spaces indicate soil is not suitable for crop at the management level specified at the head of the column]

Soil	Lespedeza		Pasture	
	A	B	A	B
	Tons	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Bodine cherty silt loam, steep phase	------	0. 6	------	40
Dulac-Cuthbert complex, hilly phases	------	------	------	------
Dulac-Cuthbert complex, eroded hilly phases	------	------	------	------
Dulac-Cuthbert complex, severely eroded hilly phases	------	------	------	------
Guin-Brandon soils, severely eroded hilly phases	------	------	------	------
Guin gravelly loam, steep phase	------	------	------	------
Gullied land, Cuthbert and Dulac soil materials	------	------	------	------
Gullied land, Memphis soil material	------	------	------	------
Gullied land, Ruston soil material	------	------	------	------
Gully wash	------	------	------	------
Hilly land, Coastal Plain material	------	------	------	------
Hilly eroded land, Coastal Plain material	------	------	------	------
Made land	------	------	------	------
Mines, pits, and dumps	------	------	------	------
Ruston fine sandy loam, severely eroded hilly phase	------	------	------	------
Ruston fine sandy loam, steep phase	------	------	------	------
Ruston fine sandy loam, severely eroded rolling phase	------	------	------	------

[1] "Cow-acre-days" is the number of days per year that 1 acre will graze 1 cow without injury to the pasture.

Generally, these soils are low in organic-matter content, very low in plant nutrients, and strongly acid. Productivity is very low. Air and moisture circulation are good, and the soil material would favor normal development of root systems. However, runoff is very rapid, and very little rainfall is absorbed and retained by these soils. The water-supplying capacity is very low.

Present use and management.—About one-third of the acreage in group 15 supports mixed hardwood forest. Some cleared areas are idle. Others are used along with nearby soils for pasture. The pasture is composed of native plants, mostly broomsedge, and weeds, brush, and briers. No special efforts are made toward improving either the wooded or the cleared areas.

Suitable crops and rotations.—Forestry is the only practical use for soils such as these. Loblolly or shortleaf pine is a good choice, but on the better sites and the sandier soils yellow-poplar can be grown. A program of reforestation should be carried out on the two-thirds of the total acreage that is not now wooded. The section on forests describes practices that would be good for establishing and managing forests on soils of this group.

If, for economic or other reasons, any of these soils should be used for crops or pasture, very careful management will be necessary to prevent serious damage to the soils. Enough lime and fertilizer should be used, and every reasonable practice for water control should be followed. Selection and rotation of crops must be carefully done to keep a heavy vegetation on the soils as much of the time as possible. Stripcropping is advisable on most slopes.

To maintain good pasture, application of lime and fertilizers, especially phosphorus, and use of other good management practices are required. Legumes should make up a considerable part of the pasture sod. The steep slopes, stoniness, and general inaccessibility of these soils make it hard to apply good management practices such as spreading lime and fertilizer and cutting weeds.

FLOODED SOILS

The soils listed in table 22 were all mapped on the low bottoms of the Tennessee and the Big Sandy Rivers at the time of the survey. Since that time, Kentucky Reservoir has been filled and all of these soils within the county have been flooded. Other soils that were flooded are described in the management group in which the unflooded areas of the same soil are classified.

These flooded soils were extremely varied in their suitability for crops. Some were among the most productive of the county; others were rather unproductive. Crops planted on any of them were in danger of flooding every year.

CAPABILITY GROUPS OF SOILS

The capability grouping is an arrangement of soils based on their relative suitability for crops, pasture, woodland, or wildlife; the difficulty in using them; and the risk of erosion or other damage. It is widely used in helping farmers plan their practices for soil and water conservation.

Eight broad classes are provided in the capability arrangement, although not all classes are used in Henry County. Each soil is placed in one of these broad classes after joint study by several persons of the ways the soil performs or responds when it is used.

Soils that are easy to farm and have no serious limitations for use are placed in capability class I. Such soils are not subject to more than slight erosion, drought, wetness, or other limitations and are

TABLE 22.—*Soils flooded by Kentucky Reservoir, and yields that could have been expected from selected crops at two levels of management*

[Yields in columns A could have been expected over a period of years at the common level of management; yields in columns B could have been expected under a high level of management; blank spaces indicate soil was not suitable for crop at the management level specified at the head of the column]

Soil	Corn		Cotton		Wheat		Lespedeza		Alfalfa		Red clover		Sweet-potatoes		Tobacco		Pasture	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
	Bu.	*Bu.*	*Lbs.*	*Lbs.*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Bu.*	*Bu.*	*Lbs.*	*Lbs.*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Egam silty clay loam	30	45	-----	-----	----	----	0.8	1.5	-----	-----	-----	-----	-----	-----	-----	-----	-----	100
Huntington silt loam	50	65	-----	-----	----	----	1.2	1.6	-----	-----	-----	-----	-----	-----	-----	-----	125	170
Huntington fine sandy loam	30	60	-----	-----	----	----	1.2	1.4	-----	-----	-----	-----	-----	-----	-----	-----	120	150
Sequatchie fine sandy loam	40	70	400	650	12	15	1.0	1.4	2.2	3.2	1.2	1.8	60	125	1,200	1,700	70	140
Wolftever silt loam	30	50	320	480	12	15	1.0	1.2	2.0	3.0	1.1	1.8	80	175	1,000	1,600	80	120
Wolftever silty clay loam, eroded phase	25	42	300	400	10	12	.8	1.0	2.0	3.0	1.0	1.7	70	150	800	1,400	70	95

[1] "Cow-acre-days" is the number of days per year that 1 acre will graze 1 cow without injury to the pasture.

at least fairly fertile. They are good for many uses. The farmer can use his class I soils for crops without special practices, other than those needed for good farming anywhere, and can choose one of several cropping patterns; or if he wishes he may use the soil for pasture, trees, or for other purposes.

Soils are placed in class II if they are a little less widely adaptable, and thus more limited than those in class I. For example, a gently sloping soil may have a slight erosion hazard that requires contour farming or other practices to control runoff. Other soils may be placed in class II because they are too droughty, too wet, or too shallow to be in class I. Climate can also be a limiting factor if cool or dry, but it is not a limiting factor in the capability grouping in Henry County.

Class III contains the soils that are suitable for regular cropping but have more stringent management requirements than those in class II. Soils even more limited and narrower in crop adaptations than those in class III, but still suitable for tillage for part of the time or with special precautions, are placed in class IV.

Soils not suitable for cultivation, or on which cultivation is not advisable, are in classes V, VI, VII or VIII. Class V consists of soils not subject to erosion but unsuited to cultivation because of stoniness, standing water, or frequency of overflow. It does not occur in Henry County. Class VI contains soils that are steep, droughty or shallow but will produce fairly good amounts of forage, orchard fruits, or forest products. As a rule, class VI soils should not be cultivated, but some of them can safely be disturbed to prepare for planting trees or seeding extremely long-producing forage crops.

Soils in class VII are more limited than those in class VI, require more care in handling, and usually give only fair to poor yields of forage or wood products. Class VIII consists of soils so severely limited that they produce little useful vegetation. They may make attractive scenery or may be parts of useful watersheds. Some may have value as wildlife habitats.

SUBCLASSES.—Although the soils within a single capability class have limitations and, therefore, use and management problems of about the same degree, the kinds of problems may differ greatly. These problems and limitations may result from risk of erosion, designated by the symbol (e), excess water (w), or shallow soil, low capacity for available moisture, or low fertility (s). The subclass symbol, indicating the kind of limitation, is added to the capability class number.

Capability classes and subclasses in Henry County are given in the following list. The brief description of each subclass gives the general nature but is not a complete description of the soils included.

CLASS I.—Soils that are easy to farm and safe for use under intensive cultivation without special practices to control runoff or erosion. These soils may be expected to produce high yields under good soil and crop management. Subclasses are not defined in class I.

CLASS II.—Soils that can be used for tilled crops under slight risks of erosion or other slight limitations.

IIe: Gently sloping erodible soils.

IIs: Soils somewhat limited by moisture-supplying capacity or by low fertility.

IIw: Soils limited by inadequate natural drainage or overflow.

CLASS III.—Soils that can be used for tilled crops but under moderate risks of erosion or other slight limitations.

IIIe: Rolling or eroded soils.

IIIw: Imperfectly and poorly drained soils, difficult to drain.

CLASS IV.—Soils that have severe limitations; or due to erosion risk or wetness, require special management if used for cultivation.

IVe: Rolling soils subject to erosion.

IVw: Poorly and very poorly drained soils that are very difficult to drain.

CLASS VI.—Soils too steep for cultivation except occasionally to reestablish trees or extremely long-producing forage.

VIe: Mainly hilly or eroded soils.

CLASS VII.—Soils so steep, stony, eroded, droughty, or subject to overflow—alone or in combination—that they are unsuitable for any cultivation.

VIIe: Steep or severely eroded soils.

VIIs: Overwash or gully wash.

VIIw: Swampy soils.

UNCLASSIFIED.—Mines, pits, dumps, and made land.

Soils of Henry County have been placed in capability classes and subclasses as follows:

CLASS I:

Ennis silt loam (En).
Huntington fine sandy loam (Hu).
Huntington silt loam (Hv).
Loring silt loam, level phase (Lf).
Memphis silt loam, level phase (Me).
Shannon fine sandy loam (Sa).
Shannon silt loam (Sb).

CLASS II:

SUBCLASS IIe:

Brandon silt loam, undulating phase (Br).
Brandon silt loam, eroded undulating phase (Bs).
Dexter silt loam, undulating phase (Df).
Dexter silt loam, eroded undulating phase (Dg).
Dulac silt loam, undulating phase (Dm).
Dulac silt loam, eroded undulating phase (Dn).
Freeland silt loam, undulating phase (Fs).
Freeland silt loam, eroded undulating phase (Ft).
Grenada silt loam, undulating phase (Ge).
Grenada silt loam, eroded undulating phase (Gf).
Lax silt loam, undulating phase (La).
Lax silt loam, eroded undulating phase (Lb).
Lexington silt loam, undulating phase (Le).
Lexington silt loam, eroded undulating phase (Lf).
Loring silt loam, undulating phase (Lu).
Loring silt loam, eroded undulating phase (Lv).
Memphis silt loam, undulating phase (Mf).
Memphis silt loam, eroded undulating phase (Mg).
Paden silt loam, eroded undulating phase (Pa).
Providence silt loam, undulating phase (Pr).
Providence silt loam, eroded undulating phase (Ps).
Sequatchie fine sandy loam (Sc).

Tigrett fine sandy loam (Tc).
Tigrett silt loam (Td).
Tippah silt loam, eroded undulating phase (Tf).
Wolftever silt loam (Wo).
Wolftever silty clay loam, eroded phase (Wp).

SUBCLASS IIs:

Freeland silt loam, level phase (Fa).
Greendale cherty silt loam (Ga).
Grenada silt loam, level phase (Gd).

SUBCLASS IIw:

Briensburg fine sandy loam (Bx).
Briensburg silt loam (By).
Egam silty clay loam (Eg).
Hymon fine sandy loam (Hb).
Hymon silt loam (Hs).
Lindside and Lobelville silt loams (Ls).

CLASS III:

SUBCLASS IIIe:

Brandon silt loam, rolling phase (Bt).
Brandon silt loam, eroded rolling phase (Bu).
Dexter silt loam, rolling phase (Dh).
Dexter silt loam, eroded rolling phase (Di).
Dulac silt loam, rolling phase (Do).
Dulac silt loam, eroded rolling phase (Dp).
Freeland silt loam, rolling phase (Fu).
Freeland silt loam, eroded rolling phase (Fx).
Guin-Brandon soils, rolling phases (Gk).
Guin-Brandon soils, eroded rolling phases (Gl).
Lax silt loam, rolling phase (Lc).
Lexington silt loam, rolling phase (Lg).
Lexington silt loam, eroded rolling phase (Lh).
Lexington-Ruston soils, rolling phases (Lm).
Lexington-Ruston soils, eroded rolling phases (Ln).
Loring silt loam, rolling phase (Lw).
Loring silt loam, eroded rolling phase (Lx).
Loring silty clay loam, severely eroded rolling phase (Ly).
Memphis silt loam, rolling phase (Mh).
Memphis silt loam, eroded rolling phase (Mi).
Memphis silty clay loam, severely eroded rolling phase (Ml).
Mountview silt loam, rolling shallow phase (Ms).
Mountview silt loam, eroded rolling shallow phase (Mt).
Paden silt loam, rolling phase (Pb).
Paden silt loam, eroded rolling phase (Pc).
Providence silt loam, rolling phase (Pt).
Providence silt loam, eroded rolling phase (Pu).
Ruston fine sandy loam, rolling phase (Rm).
Ruston fine sandy loam, eroded rolling phase (Ro).
Tippah silt loam, rolling phase (Tg).
Tippah silt loam, eroded rolling phase (Th).

SUBCLASS IIIw:

Calloway silt loam, level phase (Ca).
Calloway silt loam, undulating phase (Cb).
Calloway silt loam, eroded undulating phase (Cc).
Center silt loam, level phase (Ce).
Center silt loam, undulating phase (Cf).
Center silt loam, eroded undulating phase (Cg).
Hatchie fine sandy loam, level phase (Ha).
Hatchie fine sandy loam, undulating phase (Hb).
Hatchie silt loam, level phase (Hc).
Hatchie silt loam, undulating phase (Hd).

Hatchie silt loam, eroded undulating phase (HE).
Hymon and Beechy fine sandy loams (HX).
Hymon and Beechy silt loams (HY).
Taft silt loam (TA).

CLASS IV:

SUBCLASS IVe:

Bodine cherty silt loam, rolling phase (BM).
Brandon silty clay loam, severely eroded rolling phase (BW).
Dexter silty clay loam, severely eroded rolling phase (DK).
Dulac silty clay loam, severely eroded rolling phase (DB).
Freeland silty clay loam, severely eroded rolling phase (FY).
Lax silty clay loam, severely eroded rolling phase (LD).
Lexington silty clay loam, severely eroded rolling phase (LK).
Lexington-Ruston soils, severely eroded rolling phases (LO).
Mountview silt loam, hilly shallow phase (MV).
Paden silty clay loam, severely eroded rolling phase (PD).
Providence silty clay loam, severely eroded rolling phase (PW).
Ruston fine sandy loam, severely eroded rolling phase (RP).
Tippah silty clay loam, severely eroded rolling phase (TI).

SUBCLASS IVw:

Almo silt loam (AL).
Beechy fine sandy loam (BF).
Beechy silt loam (BH).
Dyer fine sandy loam (DX).
Dyer silt loam (DY).
Henry silt loam (HH).
Melvin and Beechy silt loams (MC).
Robertsville silt loam (RC).
Routon and Henry silt loams (RH).

CLASS VI:

SUBCLASS VIe:

Bodine cherty silt loam, hilly phase (BN).
Bodine cherty silt loam, eroded hilly phase (BO).
Dexter fine sandy loam, hilly phase (DE).
Dulac-Cuthbert complex, hilly phases (DT).
Dulac-Cuthbert complex, eroded hilly phases (DU).
Dulac-Cuthbert complex, severely eroded hilly phases (DV).
Guin-Brandon soils, hilly phases (GM).
Guin-Brandon soils, eroded hilly phases (GN).
Guin-Brandon soils, severely eroded hilly phases (GO).
Hilly land, Coastal Plain material (HL).
Hilly eroded land, Coastal Plain material (HM).
Lexington silt loam, hilly phase (LI).
Lexington silt loam, eroded hilly phase (LJ).
Lexington-Ruston soils, hilly phases (LP).
Lexington-Ruston soils, eroded hilly phases (LQ).
Ruston fine sandy loam, hilly phase (RR).
Ruston fine sandy loam, eroded hilly phase (RS).

CLASS VII:

SUBCLASS VIIe:

Bodine cherty silt loam, steep phase (BP).
Guin gravelly loam, steep phase (GH).
Gullied land, Cuthbert and Dulac soil materials (GS).
Gullied land, Memphis soil material (GU).
Gullied land, Ruston soil material (GV).
Lexington silty clay loam, severely eroded hilly phase (LL).
Lexington-Ruston soils, severely eroded hilly phases (LR).
Ruston fine sandy loam, severely eroded hilly phase (RT).
Ruston fine sandy loam, steep phase (RU).

SUBCLASS VIIs:

Beechy loamy sand, overwash phase (Bg).
Gully wash (Gw).

SUBCLASS VIIw:

Beechy silt loam, swamp phase (Bi).

UNCLASSIFIED

Made land (Ma).
Mines, pits, and dumps (Mp).

SOIL ASSOCIATIONS

A soil association may be defined either as an area in which different soils occur in a characteristic pattern or as a landscape which has characteristic kinds, proportions, and distribution of component soils. The Memphis soils, for example, occur on upland ridges and are generally associated with Lexington and Tigrett soils. The Freeland soils occur on high terraces and are nearly always associated with Hatchie and Almo soils.

Each area tends to be dominated by a particular group of soils. In Henry County it is convenient to recognize 12 soil associations. These are shown on the small map in the margin of the detailed soil map.

A soil association may consist of only a few or of many soils. These soils may be similar or may differ greatly from one another. In each soil association, however, there is a certain uniformity of soil pattern. Closely associated soils are not necessarily similar in their suitability for agricultural use.

The association in which a soil occurs may influence the potential use of that soil and its relative value for agriculture. A soil may be physically suitable for corn, for example, but whether the associated soils are physically suitable or unsuitable for such use may determine how often the soil is cropped to corn and what rotations are used.

A brief discussion of each soil association area follows. More detailed information about each soil is given in the section, The Soils of Henry County, Description and Classification. The forest cover typical of each soil association is described in the section, Forests.

MEMPHIS-LEXINGTON-RUSTON ASSOCIATION

This is the largest and most important of the soil associations. It covers 33.9 percent of the county. Most of it lies along the western side, but several smaller areas are scattered over the eastern part. The topography of this association is that of a slightly to moderately dissected plain, characterized by broad, nearly level to undulating ridges and gentle to moderately strong, short slopes. Flood plains of streams within the association vary from a few feet to about one mile in width. A network of shallow drainageways, mostly intermittent, extends to all parts of the association. The larger streams carry water all year.

Typically, Memphis soils are on the broad ridgetops, Lexington soils on the narrow ridgetops or less steep ridge slopes, and Ruston soils on the steeper ridge slopes. The foot slopes or colluvial areas consist chiefly of Tigrett and Briensburg soils. The first bottoms

are mainly Hymon and Beechy soils. Freeland, Hatchie, and Almo soils are on the few small terraces. Loring soils occur in a complex pattern with the Memphis soils in some places. Small areas of Center and Ruston soils are on nearly level to depressed spots in many parts of the association.

Most soils of this association are well suited to crops and pasture (pl. 10, *A*). Nearly all soils on the ridge crests are productive and suited to many different crops. Soils on the more gentle slopes are well suited to pasture and fairly well suited to crops. Usually they can be farmed satisfactorily along with ridgetop soils. Soils on the stronger slopes may be fair for permanent pasture and also for crops if very carefully managed, but many acres are inconvenient to reach and are associated with large areas of soils unsuited to agriculture. Tigrett soils are very well suited to crops and pasture. Briensburg and Hymon soils are well suited to both but are somewhat limited by imperfect drainage. Many areas of these soils are small, wooded, rather difficult to reach, and are surrounded by soils which cannot be cropped. Many acres of the bottom, colluvial, and terrace soils are cleared and used mainly for corn and pasture.

The general prosperity of the farmers who own land in this soil association averages somewhat better than in other sections of the county. Many rural dwellings and barns are substantial. Farms are supplied with enough machinery, equipment, and work stock for efficient operation.

Farms in this association are comparatively large. They include land well suited to a very wide range of crop and pasture plants. Farmers have a choice of a great many systems of farming. Much of the farming of the county is done on soils of this association.

Farming enterprises are widely diversified, but general farming is the most common type. Dairying, livestock farming, and commercial fruit growing are practiced on some farms. Corn, cotton, and lespedeza are the principal crops. Wheat, oats, barley, whiteclover, buckwheat, red clover, and alfalfa are also grown. Sweetpotatoes are an important cash crop on some farms. Poultry, hogs, and dairy cows are kept on most farms for home use and the surplus is sold. Much of the corn and some of the hay on this association are on colluvial soils and better drained bottom lands. Parts of the bottoms and sloping upland are used only for pasture.

Land use is well adjusted to the present suitability of these soils for crops and pasture. Management practices vary but are usually below the level that would bring maximum production. The better soils usually are farmed intensively, but systematic rotations and applications of soil amendments are not followed consistently by many operators. Enough of the farmers do practice a high level of management to show the high productive capacity of the association.

Much of this soil association is sloping. All cleared land on slopes has been eroded and in some instances ruined by a close network of gullies. The agricultural value of these soils depends on their slope, amount of erosion or susceptibility to erosion, fertility, and water-supplying capacity. Most of these soils are either idle, in unimproved pasture, or in forest. They can be used for crops or pasture if carefully managed. If used for crops, these soils need fertilizers, lime,

adapted varieties of crops in a systematic rotation, and a complete water-control system to conserve soil and water.

Strong slopes or severe erosion limit the usefulness of some soils. If very well managed, some can be developed into good pasture. Many open areas next to soils that cannot be cropped probably should be wooded.

MEMPHIS-LORING-LEXINGTON ASSOCIATION

This association is comprised of five small areas within the boundaries of the Memphis-Lexington-Ruston soil association. It covers only about 2.7 percent of the county. The topography is moderately dissected, like that of the preceding association. Ridge crests are nearly level to undulating. They are bordered mostly by gentle slopes of 5 to 12 percent gradient, but a few acres may slope as much as 25 percent.

Loring and Memphis soils are most important on ridge crests. The acreage of Loring soils usually exceeds that of Memphis soils. Small areas of the more poorly drained Center and Routon soils are also on the nearly level ridgetops. Most of the slopes next to ridgetops are occupied by Lexington, Loring, Memphis, Dulac, and Ruston soils. Hymon and Beechy soils occupy narrow bottoms, and Briensburg soils are on colluvial sites. Freeland and Hatchie soils dominate on the small acreage of stream terraces.

Most areas of this association have about as many acres of the level ridge-crest soils as they have of the hilly soils. Only a small part of the association consists of the terrace, colluvial, and bottom-land soils.

Most of the farming in this association is done on the smooth upland soils. They are well suited to many crops common to the region, but they are low in lime, organic matter, and plant nutrients. Their productivity can be greatly increased, however, because they are responsive to lime, fertilizer, and manure. Their productivity is easy to maintain. Memphis and Lexington soils have good physical properties for all crops, but Loring soils have limited suitability for alfalfa and other deep-rooted crops because they have imperfect subsoil drainage and a weak siltpan layer.

The sloping soils are mostly idle; only a few small areas are farmed. Their value for crops and pasture is limited by erosion or susceptibility to erosion, low fertility, strong slopes, low water-supplying capacity, or subsoil layers that restrict root development. Bottom-land soils have inadequate drainage that restricts the range of adapted crops.

A general type of farming is commonly practiced on this soil association. Cotton, corn, and lespedeza are the principal crops. Small grain, red clover, sorghum, alfalfa, redtop, sweetpotatoes, and garden vegetables are minor crops. A few hogs, dairy cattle, and poultry are kept on all farms.

Most of this association is cleared. Forests are nearly all on the steeper slopes and in the poorly drained depressional areas. Most of the lesser slopes are idle. Corn and lespedeza are the chief crops on terrace, colluvial, and flood-plain soils, but pasture is also grown on them.

Under prevailing practices of cropping and fertilization, actual production is less than potential production on many farms. Management practices include some alternation of crops, but systematic

rotations are not consistently followed. The valley and ridgetop soils are farmed rather intensively, but most of the sloping soil remains idle year after year. Most of it is now wooded.

A program to improve fertility and increase crop yields on the soils of this association is needed. Contour tillage, use of adapted crops, moderately long rotations, water control measures, and addition of lime, organic matter, and plant nutrients are management practices that should be considered.

LORING-CENTER-MEMPHIS ASSOCIATION

About 2.4 percent of the soils of the county are in this soil association. It occupies several slightly dissected parts of the broad plain just south of the North Fork of the Obion River. Most of the association is nearly level to undulating. Mild stream cutting has left some gently sloping and hilly relief along drainageways.

Well-drained and poorly drained soils form an irregular pattern in this association. The weak siltpan in the subsoil of most of them restricts internal drainage. Loring soils are the most extensive and are undulating to rolling. Center and Routon soils typically occupy nearly level or slightly depressed areas of the uplands. Memphis soils are only a minor part of this association; they occur on well-drained sites. Soils on ridge slopes include those of the Dulac, Lexington, and Ruston series. Stream terraces along the river consist mainly of Freeland and Hatchie soils. Briensburg soils are along small drainageways or on colluvial foot slopes. Hymon and Beechy soils are on the bottom lands.

The Memphis, Loring, Freeland, and Briensburg soils in this association are excellent to good cropland. Center and Hatchie soils are well suited to a few crops and well suited to pasture. Routon and Beechy soils produce good hay and pasture if properly managed. The sloping phases of the Loring, Lexington, and Dulac soils are good to fair for crops and pasture. The hilly Ruston soils are generally best suited to forest.

Farms on this soil association vary considerably in size. They differ in apparent prosperity according to the proportion of their soils that can be farmed intensively. A few farms are of the type that produces mainly for the farm family.

General farm crops are the principal products from this association, but a few livestock are raised. The better drained upland and valley soils produce mainly corn, cotton, and lespedeza. The imperfectly and poorly drained soils provide some hay and pasture, but many acres are idle. Nearly all of the sloping land that is cleared is idle and grown over with low-grade native vegetation. Little of the association is in woodland.

Most of the crops grown on these soils are those best adapted for this association. However, they are not managed so as to bring maximum production. The better soils should be used more intensively, and the soils presently idle should be used according to their capabilities. Better adapted crop rotations, proper fertilization, liming, careful tillage, and water-control measures would greatly increase production and improve the soils. There is a large acreage of potential pasture land, which might make livestock raising profitable.

LEXINGTON-RUSTON ASSOCIATION

This association covers about 17.2 percent of Henry County, and is one of its most strongly dissected parts. Most of it lies in a north-and-south belt through the central section, but some smaller areas are in the southeastern and southwestern parts.

The landscape is characterized by narrow, winding ridges and deep narrow valleys bordered by steep slopes. The typical soil pattern consists of Lexington soils on ridgetops; Ruston soils, or complexes of Ruston and Lexington soils, on ridge slopes; Briensburg and Tigrett soils on the colluvial-alluvial areas; and Hymon and Beechy soils on the stream bottoms. Small areas of Memphis, Providence, and Dulac soils are on the broader ridges.

Although the area of this association is large, the proportion suited for crops is small. The Lexington and Ruston soils on the hilly uplands are poorly suited to crops or pasture because of steepness, low fertility, erosion injury, susceptibility to further damage by erosion, and low water-supplying capacity. Small areas of Lexington soils may be suitable for pasture, but are so isolated among unsuitable soils that such use is not practical. The soils on the ridge crests are naturally productive and well suited for crops, but their small areas are surrounded by large areas of soils unsuitable for use. Hymon and Briensburg soils in the valleys are suited to crops but imperfect drainage limits the kinds that can be grown. Also, these soils are isolated among others that cannot be used for crops.

This association cannot support a prosperous agriculture because there is not enough soil that is adapted to crops. The prosperity of each farm is related to the amount of such crop-adapted soil it contains. Few farmers have tractors or other power machinery. Many have only a minimum of equipment and work stock. Many farm homes have been without modern conveniences, but rural electrification projects have improved many of them.

Most farms in this area are of the type that produces mainly for the farm family. Most of the acreage is idle land, forest, or waste-land. The rough topography limits the cropland to small units. Cotton is the main cash crop. Corn and lespedeza are the most extensive crops, but a few acres are used for vegetables, wheat, oats, sweetpotatoes, red clover, and alfalfa. Hogs, dairy cows, and poultry are kept for household use and some cash income. Some large farms raise beef cattle.

Few of the soils of this association are used to their fullest capabilities. The management practices used on most farms do not result in the best yields of crops. A more effective use of all available crop and pasture land would improve the farms of this area considerably.

Most soils of this association respond readily to good management practices. More use of lime, fertilizers, soil-building crops, and better crop varieties in adapted rotations would increase yields. Increasing the size of the farm unit would help in some places.

GRENADA-CALLOWAY-HENRY ASSOCIATION

This small but important association of soils covers about 4 percent of the county. It is nearly level to undulating. The soils are poorly to moderately well drained and have hardpans.

Grenada soils are the most extensive soils on the uplands. Many small areas of Calloway and Henry soils occur in slight depressions at the heads of or along intermittent drainageways. Narrow bands of Providence and Dulac soils are on the gentle ridge slopes. Lexington, Ruston, Brandon, and Guin soils are on the few acres that have steeper slopes. Briensburg soils occur on colluvial-alluvial positions, and Hymon and Beechy soils predominate in the bottom lands subject to flooding.

Nearly all of this area is physically suited to crops and pasture. However, the kinds of crops that can be successfully grown are limited by imperfect drainage, low water-supplying capacity, and restricted root zone. The Grenada, Loring, and Lexington soils are well to fairly well suited to general crops. The high water table and susceptibility to flooding restrict the suitability of Briensburg, Calloway, and Hymon soils for crops and pasture. Henry soils are poorly suited to crops because of poor drainage. If carefully managed, they produce good hay and pasture.

This association supports a fairly prosperous, diversified agriculture. Practically all the area has been cleared. Most of the idle land is on soils of the steeper slopes, on Calloway and Henry soils of the upland flats, and on Beechy soils of the bottom lands.

General farming and tobacco production are the most important enterprises. Corn and lespedeza are the most extensive of the general crops, but wheat, redtop, vegetables, sweetpotatoes, and cotton are also produced. A few dairy and livestock farms are in this area. Some hogs and poultry are kept on most farms for home use and as a source of income.

Management, especially on the small farms, is more difficult on this association than it is on farms in the Memphis-Lexington-Ruston soil association. Soils are less productive and are suited to fewer crops. Drainage, erosion control, and improvement of fertility are necessary. Erosion is not a serious problem, except on the steeper slopes. Use of good crop rotations, of lime and fertilizer, and contour tillage on slopes will control erosion and improve soil productivity.

DULAC-HYMON-TIPPAH ASSOCIATION

This association covers about 9.2 percent of the county in a narrow belt running north and south through the central part. It occupies an undulating to gently rolling low-lying plain that is only slightly dissected. Ridges are moderately broad and have short gentle slopes adjoining. Streams have cut to shallow depths below the general level of the landscape but their flood plains are moderately wide.

Most of the association consists of Dulac soils on undulating to gently rolling relief. Tippah soils are on similar relief but are less extensive; they occur especially in the southern part of the association. Hymon and Beechy soils are on most of the flood plains, and Briensburg soils are on the colluvial areas. Providence, Lexington, Ruston, Freeland, Hatchie, and Almo soils form a minor part of the association.

Most of the area has been cleared, and the greater part is suitable for crops. These soils are naturally unproductive. The upland and terrace soils of this association have a distinct hardpan at a depth

of about 2 feet. Many acres of upland soils that have been severely damaged by erosion remain idle (pl. 5, *B*).

Most farms on this association are general farms. A few derive most of their income from dairy and livestock products. Corn and lespedeza are the main crops, but cotton is an important cash crop. Many acres are used for hay and pasture. Small grains, redtop, crimson clover, red clover, and sweetpotatoes are also grown.

Farmers of this area are limited in choice of enterprises and in opportunity for good farm management because farms are small and the soils infertile. It is difficult to get the production needed without damaging the soils. Well-balanced use and management, which includes use of enough lime and fertilizers, is needed on most farms.

PROVIDENCE-LEXINGTON ASSOCIATION

This association consists of five small areas which total about 4.0 percent of the county. They lie along the eastern boundary of the Dulac-Hymon-Tippah association but are more strongly dissected. The topography is undulating to strongly rolling or hilly. The ridge crests—narrow to moderately wide—are separated by gentle to strong short slopes and by narrow valleys that have intermittent streams and drainways.

Providence and Lexington soils extend over the ridge crests and down to the flood plains on the more gentle slopes. On stronger hilly land, an irregular intermingling of Lexington and Ruston soils is common. Hymon and Beechy soils prevail along the stream bottoms. Briensburg and Tigrett soils occupy colluvial sites. Dulac, Freeland, Hatchie, and Almo soils form a minor part of the association but are important in some localities.

Soils of this group are generally better suited to crops than those of the Dulac-Hymon-Tippah soil association. Providence soils usually predominate, but many farms are improved by small acreages of the better Lexington soils. Providence and Lexington soils on sloping relief are suitable for crops and pasture but have lost much of their fertility by erosion.

Ruston soils are inextensive and their steep slopes, erodibility, and low fertility make them unsuitable for crops. Hymon and Briensburg soils are limited in crop adaptation because of imperfect drainage. Beechy soils on poorly drained bottoms are not suitable for crops but are fairly good for pasture.

These soils are used mostly for general farm crops. Corn and lespedeza cover the largest acreage, but small grains, alfalfa, red clover, and whiteclover are also produced. Most of the corn crop for some farms is grown on the productive Briensburg, Tigrett, and Hymon soils. Cotton is the principal cash crop on most farms, but hogs, dairy products, corn, and hay also bring some income. Farming is done almost entirely on the soils of the ridgetops and valleys. Nearly all the cleared hillside soils are idle, and almost no efforts are made to check their erosion. Most soils are only moderately well managed, and average crop yields are low.

These soils are less limiting in choice and rotation of crops than soils of the Dulac-Hymon-Tippah association. They are fairly fertile and responsive to fertilizers so that many kinds of crops can be included in the rotation. However, the compact layer in Provi-

dence soils and the high water table in Briensburg and Hymon soils limit their use for deep-rooted crops. All of these soils are acid. They need lime for grasses and legumes, and they need mineral plant nutrients. Commercial fertilizers are necessary to maintain and improve productivity.

Crop production and farm income may be increased materially on most farms by better use of sloping land that is now idle. Although much of it has been eroded and is susceptible to further erosion, careful management, particularly contour tillage, fertilization, liming, and use of adapted crops will restore the suitability of these soils for crops. In spite of differences in slope, soils in this association are quite similar in management requirements, and uniform practices can readily be applied. The chief hindrance to a well-balanced farm program is the small acreage of crop-adapted land available on most farms. Maintenance of fertility, water and erosion control, and selection of crops are important problems in this association.

BRANDON-GUIN-LAX ASSOCIATION

This association is the most steep and hilly in the county and covers about 8.8 percent of the county area. It occupies a highly dissected, rough landscape in the northeastern section.

Most of the soils are on long steep slopes which extend from the narrow winding ridge crests down to the drainageways and valleys. The parent materials of soils in this area are thick beds of waterworn gravel. On ridge crests, the gravel is capped by a thin layer of loess from which the more productive soils have developed.

The ridgetops and gentler ridge slopes have mostly Brandon and Lax soils. Guin soils occupy the steeper upper ridge slopes and form a complex pattern with the Brandon and Lax soils on the higher ground. Ruston and Lexington soils are distributed in a complex pattern on the lower parts of the landscape. Tigrett and Briensburg soils lie along drainageways and foot slopes (pl. 10, *B*). On the bottom lands are Hymon and Beechy soils. A few acres of Providence and Dulac soils are also included.

Most of this association consists of large areas of forested soils which would not be suitable for crops or pasture if cleared. There are no large, continuous areas of soils of suitable relief and sufficient fertility for crops. The moderately productive Brandon and Lax soils on the ridgetops are suited to crops, and the Briensburg, Tigrett, and Hymon soils in the valleys are also suited to crops and pasture. However, they all occur in small areas, widely separated by other soils that cannot be used for farming. The Guin and Ruston soils are very poorly suited to either crops or pasture because they are low in fertility, steep, droughty, hard to work, and likely to erode.

This soil association is poorly suited for farming. The few acres of good cropland are so separated and isolated that good farm management is very difficult. Most of the farms in this area are of the type producing for the farm household. Little farm equipment and work stock is owned. The land supports a very sparse population.

Cotton, corn, and lespedeza are the chief crops. Cotton is the main cash crop. A few acres of wheat, vegetables, sweetpotatoes, and other crops are grown. Most farms keep a few hogs and one to several dairy cows.

Management is a serious problem on this soil association. There is so little cropland available that it hardly supports prosperous farming. Little woodland has relief, fertility, and other properties that would make it suitable for clearing and using for crops. Nearly all the hilly land that has been cleared has been so injured by erosion that it is not suitable for crops or pasture. It would be so difficult and expensive to improve these soils for such use that it would be better to reforest them.

Some of the forested soils could be cleared for crops. Long rotations that include close-growing crops and legumes would be needed to conserve these soils. More intensive use at higher management levels would produce better crop yields on the soils now farmed.

FREELAND-HATCHIE-PROVIDENCE ASSOCIATION

This association is made up of several separate areas that cover about 4.9 percent of the county. They are located in the eastern part, mainly along the Big Sandy and Blood Rivers. The association consists of high river terraces and small areas of upland. The nearly level to gently rolling topography is weakly dissected.

Freeland soils on undulating to rolling relief are by far tbe most extensive. Slightly undulating to nearly level Hatchie soils are moderately extensive. Included in this soil association are a few acres of Almo soils on level to slight depressional positions, Briensburg and Tigrett soils on colluvial slopes, Hymon and Beechy soils on bottom land, and Bodine soils on narrow steep slopes next to Kentucky Reservoir.

Most soils of this association are suitable for crop production. Many, however, have a siltpan layer that somewhat affects their use suitability, drainage, and productivity. Freeland soils are so extensive that most farm management plans are adapted to their needs. They are moderately productive, but their suitability for crops is slightly limited by impeded drainage and restricted rooting zone.

Hatchie soils are less suitable for crops because of their moderately high water table, but they are fair for pasture and hay. The Almo soil is very low in productivity because of poor drainage. Crops often fail on this soil, but it has some small value for pasture. Briensburg and Hymon soils are highly productive. Briensburg soils cannot grow some crops because of imperfect drainage, and the Hymon soils are likely to be overflowed.

This association supports diversified farming. General farming and livestock enterprises bring in most of the farm income. Corn and lespedeza are the most extensive crops; cotton is the chief cash crop. Small grains, hay, soybeans, sorghum, red clover, whiteclover, alfalfa, and vegetables are minor crops. Hogs, cattle, poultry, dairy products, and sheep also are sources of income. Most of this association is cleared for crops or pasture. Some large areas of poorly drained or eroded soils are idle or wooded.

Most of the soils are now used according to their capabilities. Management practices, however, are at a low level and crop yields are much less than they should be. The soils are deficient in lime, organic matter, and plant nutrients. These amendments should be added, and systematic rotations of adapted soil-building crops should be used to improve the soils.

Contour tillage and other measures to conserve soil and water are needed on the sloping soils. Such soils now idle should be seeded to pasture, which will provide ground cover and prevent further erosion. Some should be used for crops under a system of long rotations and liberal use of soil amendments.

Productive use of all available land, more fertilization, use of better adapted crop rotations, and more efficient control of water on the land would greatly improve the standard of living in this area.

LEXINGTON (LEXINGTON-RUSTON) ASSOCIATION[46]

This association is important in the eastern part and covers about 10.5 percent of the land of the county. The area is an undulating to gently rolling, moderately dissected loess plain. The ridges are comparatively broad and the slopes are mild. Relief is fairly hilly along the large valleys.

Lexington soils cover nearly all the ridgetops and much of the ridge slopes. Ruston soils are a minor part of the association. Small units of Ruston soils form a complex pattern with Lexington soils on ridge slopes. Some of the more hilly areas consist entirely of Ruston soils. Tigrett and Briensburg soils are on colluvial areas above overflow. Shannon, Hymon, and Beechy soils make up the first bottoms. Small areas of Memphis, Hatchie, Freeland, and Providence soils are also in this association.

This association has some of the most highly productive agricultural soils in the county (pl. 10, *C*). All the Lexington, Tigrett, Briensburg, Shannon, and Hymon soils are well suited to crops and pasture and are good to excellent as cropland. The value of Briensburg and Hymon soils is reduced by their imperfect drainage. Some areas of Lexington soil have been lowered in fertility by erosion. Beechy soils are poorly drained, but they are fairly well suited to pasture and hay. Most areas of Ruston soils are not suitable for either crops or pasture.

General and livestock farming is carried on rather intensively throughout this area. The combination of productive crop and pasture soils makes this association very favorable for the raising and feeding of hogs, sheep, and beef and dairy cattle. Livestock products bring an important part of the farm income.

Cotton, corn, wheat, and lespedeza are the most extensive crops, but alfalfa, red clover, and whiteclover are important minor crops. Cotton is the main cash crop. Most of the corn and hay is fed to livestock and the small surplus is sold. Moderate use of fertilizers is widespread. Some alternation of crops is practiced on most farms, but systematic rotations are not general.

Most of the association has been cleared and is farmed intensively. Some hilly land remains in forests. A few small woodlots are on ridge crests and less sloping areas, but these would be good for crops and pasture. Other small areas, now idle because of erosion and low productivity resulting from poor soil management, could still be used for crops and pasture, if improved and maintained.

This association contains many good farm houses and barns that have modern conveniences. Tractors and other power machinery are

[46] On soil map this association is called Lexington–Lexington: Ruston complex.

common. Agriculture is well stabilized and profitable over most of the association.

Although a large area consists of fertile soils, some consistent application of fertilizers and lime is needed for soil improvement. In addition, systematic rotations of adapted crops, contour tillage, and some supporting practices for conservation of soil and water are required on upland soils. Many of the pastures can be greatly improved by addition of lime and phosphorus and elimination of weeds.

GRENADA-DULAC-PROVIDENCE ASSOCIATION

This is the smallest soil association in Henry County. It covers only 0.9 percent of the county and is located in the north-central part along the headwaters of the Blood River. The general landscape is an undulating, weakly dissected plain. The ridges are broad and their slopes are short and mild. Drainageways are very shallow and intermittent in flow. They have formed only very narrow bottoms. Topographically, this association resembles the Grenada-Calloway-Henry association, but it has a different pattern of soils and only a few acres of these are Calloway and Henry soils. Grenada soils make up a considerable part of the association and they are confined to ridgetops. On the ridge slopes are mainly Dulac or Providence soils. Briensburg and Hymon soils are along the small drainageways. Henry, Calloway, Lexington, and Beechy soils are minor inclusions.

Almost all of the soils of this area are suitable for either crops or pasture. Most of the upland soils have a hardpan layer in the subsoil. This affects their suitability for crops and pasture, because roots penetrate only to the water table that forms above the hardpan. The soils are therefore best for shallow-rooted crops. The Briensburg and Hymon soils along drainageways are productive and friable. They are best adapted to crops that will tolerate their imperfect drainage.

The few farms in this association are of a general type. They are medium in size and have a high proportion of crop- and pasture-adapted soils. Farmers have a wide choice of enterprises. Nearly all the area is cleared, and most of it is fairly well developed. Small areas are idle.

Lespedeza is grown on the largest acreage, but enough corn is produced for farm needs. Small acreages of tobacco and cotton are grown for cash sale. A few acres of wheat, redtop, vegetables, sorghum, fruit, and sweetpotatoes are grown. Hogs, dairy cattle, and poultry are kept for home use and a little income.

The prosperity of the farmers of the association would be increased by higher management levels and the selection of crops adapted to the soils.

BODINE-MOUNTVIEW-PADEN ASSOCIATION

This association is one of the smallest and agriculturally least important in the county. It covers remnants of an old, high, undulating to rolling terrace and deeply dissected uplands. Many of its long, moderately steep slopes extend from narrow, winding upland ridgetops down to the shoreline of Kentucky Reservoir. The terrace section is moderately dissected, and most of it is gently sloping. The ridge crests are small and are irregular remnants of older levels.

Mountview soils are the most extensive on the upland. They predominate on ridgetops and slopes. Bodine soils dominate on the steeper slopes. Paden soils are the most extensive on the terraces. Greendale and Briensburg soils are on sloping alluvial-colluvial fans. Areas of Lobelville soils, a few acres in size, occur in first bottoms. Small areas of Providence and Guin soils are included in the uplands.

Soils on ridgetops, although suited to crops and pasture, are isolated among large areas of soils not suited to farming. Practically all the upland is in forest. The soils on the terraces are mostly good for crops and pasture, but a large part of their acreage is wooded. Cleared areas of Paden soils on slopes are fair for crops and pasture. Greendale and Briensburg soils are suitable for crops, except that imperfect drainage limits the range of adapted crops.

All of this association is now in a game preserve. All former landowners have moved away. The farmland is now idle or reverting to native vegetation. A few scattered areas along the edges of Kentucky Reservoir are planted to feed crops for birds.

FORESTS [5]

Originally, the soils of the county supported an excellent growth of hardwood trees. At one time the sale of lumber was an important source of income to the county. The 47 sawmills that were operating in Henry County in 1946 produced 11,475,000 board-feet of hardwood lumber and 282,000 board-feet of softwood lumber during that year.

FOREST RESOURCES

Nearly all of the original forests of Henry County have been cleared or have been cut over several times. Most of the better and larger trees have been cut. Small- and medium-sized trees and low-quality cull trees make up most of the remaining stand.

Many acres now in forest are hilly land not well suited to either crops or pasture. Large blocks of poorly drained stream bottoms have been left in woods. Small plantations of pine trees have been established on some gullied or eroded land, and trees have been planted on some of the uplands and bottom lands next to Kentucky Reservoir. Some small areas of idle or abandoned land are growing up to forest that includes sassafras, sumac, and various oaks.

More than one-third of the county, about 134,171 acres, was in woods or forest in 1946. Farm woodland composed 61,445 acres of this. Of the remaining 72,726 acres of forest not on farms, 8,400 acres were held by the Tennessee Valley Authority in the game preserves and other areas surrounding Kentucky Reservoir.

In 1946 the Forestry Division of the Tennessee State Conservation Department estimated the forest reserves of Henry County at 54,215,000 board-feet of sawtimber and 286,000 cords of cordwood (*9*). Most of the sawtimber reserves were red oak and white oak, but there were also supplies of yellow-poplar, hickory, beech, blackgum, and maple. The local supply of redcedar formerly supported an industry manufacturing cedar chests and cedar pencils. A cedar-chest

[5] Prepared by L. E. Odom in collaboration with E. B. Shivery, Extension Forester, University of Tennessee.

factory was located at Paris. Now the local cedar supply is not used, and the wood is imported from the West Coast.

FOREST COVER BY SOIL ASSOCIATION AREAS

In general, each soil association tends to support a particular type of forest. Several of the associations have the same dominant forest type.

Memphis-Lexington-Ruston association.—Most of this association has been cleared of timber. The woodlands that remain are mostly on soils of the Ruston and Beechy series. Small acreages of other soils are still wooded.

The upland hardwood forest type is on the Ruston soils and most of the other soils of the upland. Species of trees characteristic of the upland hardwoods forest type are Southern red oak, white oak, post oak, black oak, scarlet oak, white hickory, and shagbark hickory, and also a scattering of yellow-poplar, sugar maple, Northern red oak, sweetgum, dogwood, and redcedar. The well-drained Ruston soils are capable of producing sawtimber of high quality for both lumber and veneer. Farm woodland on these upland soils will respond to improved management and will yield relatively high returns in comparison with many other soil associations.

The bottom-land hardwood forest type occurs on Beechy and Hymon soils, particularly along the North Fork and Middle Fork of the Obion River. The bottom-land hardwood forest type in this association includes such water-tolerant species as willow oak, water oak, overcup oak, swamp chestnut (cow) oak, cherrybark oak, pin oak, sweetgum, blackgum, red maple, elm, and water hickory. Some beech, cypress, and tupelo-gum grow here, and willow, cottonwood, and river birch are locally conspicuous.

Memphis-Loring-Lexington association.—Most of this association is cleared. Forest remains largely on the steeper slopes and in the poorly drained depressional areas.

The Memphis, Loring, Lexington, and Ruston soils support the upland hardwoods forest type. They can produce high-quality timber of desirable species, as white oak, Southern red oak, yellow-poplar, post oak, and white hickory.

The Routon soils, although poorly drained, usually grow upland hardwoods—white oak, red oak, shagbark hickory, and associated species. Where surface water stays for longer periods, the characteristic bottom-land hardwoods blackgum, red maple, willow oak, and water oak are more common.

Soils of the Center series have forest cover somewhat similar to that of the Routon, but the proportion of upland hardwood species is greater.

Sweetgum, elm, beech, bitternut hickory, yellow-poplar, green ash, blackgum, cherrybark oak, red maple, pin oak, and sycamore are common on the soils of the colluvial lands and bottom lands.

Loring-Center-Memphis association.—Most of the soils of this association are suitable for crops and pasture and have been cleared. The hilly Ruston soils are generally best suited to forest.

The trees on the uplands generally are white oak, Southern red oak, sugar maple, post oak, yellow-poplar, and hickory.

Sweetgum, beech, elm, blackgum, green ash, red maple, willow oak, cottonwood, river birch, overcup oak, swamp chestnut (cow) oak, water hickory, and similar water-tolerant species are common in the forests on the bottom lands and poorly drained uplands.

Lexington-Ruston association.—Three-fourths or more of this association is now in forest. This soil association includes extensive areas of forest as well as smaller farm woodlands. For timber growing, it is of first importance in both extent and capability.

The wooded soils of the uplands, chiefly the Ruston, support trees typical of the upland hardwoods forest type. Southern red oak, white oak, post oak, white hickory, pignut hickory, and dogwood are common. Blackjack oak grows in the drier upland locations where growing conditions are more severe. Yellow-poplar is in the mixture where the moisture supply is more uniform throughout the year. Sweetgum grows in moist sites that have satisfactory internal drainage. Beech sometimes appears in the mixture. Other species scattered on these soils are blackgum, black oak, redcedar, sugar maple, elm, black walnut, Northern red oak, scarlet oak, sourwood, and sycamore. Water-tolerant species characteristic of the bottom-land hardwoods type are on the small areas of Hymon and Beechy soils now in forest.

Grenada-Calloway-Henry association.—Nearly all of this association has been cleared. The few acres of forest are all farm woodland, mostly on the Henry and Calloway soils. The woodlots include blackjack oak, white oak, Southern red oak, post oak, and the common hickories. A few elm, beech, blackgum, and other trees are scattered in these woods. Bottom-land hardwoods grow in a few of the more poorly drained sites. There are so few of these little woodlots and the drainage of the predominant soils is so unsuited to the growth of better quality wood products that there is little opportunity to improve forest management.

Dulac-Hymon-Tippah association.—Most of the area has been cleared. The remaining woodland has almost no salable sawtimber left. Trees are of cordwood size and they vary in quality.

The upland part of this association supports a moderate to poor stand of upland hardwoods. Southern red oak, white oak, the hickories, post oak, blackjack oak, elm, dogwood, sweetgum, and yellow-poplar are the species represented.

The bottom-land hardwood species grow mainly on the poorly drained soils of the bottom lands. Willow oak, water oak, red maple, blackgum, sweetgum, willow, swamp chestnut oak, green ash, and sycamore are species of the bottom-land hardwoods forest type.

Providence-Lexington association.—Most of this association is used for general farm crops. The forests grow on the strongly sloping Ruston soils and, to a lesser extent, on the Beechy soils of the bottom lands. Many of the trees are cut as soon as they attain cross-tie size. Young trees and cull trees usually comprise the stand.

The forest now in these uplands includes such trees as white oak, post oak, Southern red oak, blackjack oak, blackgum, white hickory,

and pignut hickory. A few redcedars and yellow-poplars grow in the stand. In the lowland areas, elm, sweetgum, willow, red maple, willow oak, green ash, and sycamore are common.

Brandon-Guin-Lax association.—Nearly all of the cleared hilly land in this association has been eroded and has lost its suitability for pasture or crops. It does not seem worth while to try to improve these soils for such uses. On many farms these areas probably would be better used for forests.

A large part of the association, chiefly Guin soils, is now wooded. The growing conditions are so difficult that timber trees grow slowly and never become large. These forests produce crossties.

The trees making up most of the stand are white oak, post oak, black oak, scarlet oak, Southern red oak, white hickory, chestnut oak, blackjack oak, dogwood, and pignut hickory. A scattering of Northern red oak, winged elm, blackgum, and sourwood, and an occasional beech or yellow-poplar occur in the stand.

North- and east-facing slopes, hollows, and ravines, where growing conditions are best, normally have a stand of Northern red oak, white oak, sugar maple, black walnut, yellow-poplar, sweetgum, slippery elm, white elm, and beech. The drier south and west slopes support mainly sourwood, chestnut oak, scarlet oak, blackjack oak, blackgum, and post oak. Trees on these slopes generally are of lower quality than trees that grow in better locations.

Freeland-Hatchie-Providence association.—Most of this association has been cleared and is used for crops or pasture, but some fairly large areas of poorly drained or eroded soils are idle or wooded.

Species of the upland hardwoods forest type—Southern red oak, post oak, white oak, blackgum, and the common hickories—are on the better drained upland areas. Poorly drained soils support water-tolerant species, including red maple, blackgum, sweetgum, willow oak, water oak, sycamore, and green ash.

Lexington (Lexington-Ruston) association.—Most of this association has been cleared and is farmed intensively. The woodlots are small and are on ridge crests. These ridge crests and some of the less sloping areas are potentially good land for crops and pasture. A few acres, mostly hilly, remain in forest. The wooded areas are covered mainly by white oak, post oak, Southern red oak, white hickory, pignut hickory, blackgum, dogwood, sourwood, and an occasional sweetgum or yellow-poplar.

Grenada-Dulac-Providence association.—Practically all of this association is suited for either crops or pasture. Nearly all of it is cleared, and most of it is fairly well developed.

Bodine-Mountview-Paden association.—All of this association is now in a game preserve. Almost all of the upland is in forest. The terrace soils, mostly of the Paden series, would be good for crops and pasture. Most of this area, however, is wooded. These forests would be best suited to producing crossties.

The upland hardwood forest type covers much of this association. The common upland hardwoods are present; that is, white oak, post oak, black oak, scarlet oak, white hickory, Southern red oak, pignut

hickory, and blackjack oak. The severity of the growing site influences both the composition and the quality of the stand. Scarlet oak, blackjack oak, black oak, white hickory, chestnut oak, sourwood, and redbud grow on dry upper slopes.

In ravines, on lower slopes, and on north- and east-facing aspects, white oak, Northern red oak, yellow-poplar, and sometimes black walnut, white ash, and sugar maple appear in the general upland hardwoods forest type.

FOREST MANAGEMENT

Benefits of good forest management.—The woodlands of Henry County are not well managed. Selective cutting is not generally practiced, and few attempts are made to use the cull trees and waste materials. Some of the wooded areas are grazed by cattle and hogs.

Improved forest management is needed to prevent deterioration of forest resources in this county and to increase the returns received for forest products. It is not likely that many farmers will receive substantial income from forest products for some years to come, because good timber takes so long to grow. Nevertheless, soil conservation, protection of wildlife, and the need for forest products on farms make the management and protection of tree crops important enough to be considered. The quality of timber in the forests of this county could be improved by good management practices over a long term of years.

A well-maintained forest has important indirect benefits aside from receipts from wood products, especially on critical areas of land subject to erosion. It slows runoff and improves or maintains favorable soil structure.

A protective layer of forest litter absorbs the impact of the falling drops of water, and preserves the tiny pores and channels between the soil particles as the water soaks in. Fungi, bacteria, and tiny animals that consume the litter and each other produce a dark-brown colloidal substance called humus. When this humus is carried downward into the mineral soil by percolating water, it improves both physical structure and fertility. This litter and humus have great ability to absorb water directly. Porosity is further increased by the channels left after the decay of dead roots.

The soil-binding function of the surface roots is very useful. The densest network of surface roots is found in the lower parts of well-developed layers of litter. Control of erosion and maximum absorption of rainfall result when there is forest cover on the soils. A soil covered even by second-growth forest does not lose its porosity unless it is overgrazed or the litter is destroyed by fire (*1*).

Results obtained at the erosion station near Statesville, North Carolina, showed that only 0.002 ton of soil per acre and 0.06 percent of the rainfall was lost annually in runoff from virgin woods (*4*). A wooded plot that was burned over twice yearly showed runoff of 11.5 percent and a soil loss of 3.08 tons per acre each year. A similar but unburned plot lost 0.06 percent of its rainfall in runoff and 0.001 ton per acre of soil. Experiments at Zanesville, Ohio, for a 9-year period showed that cultivated land lost 20.6 percent of rainfall in runoff, and 17.18 tons of soil per acre each year. Pasture land in these experiments

lost 13.8 percent of its rainfall and 0.10 ton of its soil. The woodland plot lost only 3.2 percent of its rainfall and 0.01 ton of its soil per acre (*3*).

Management practices.—Forest management requires attention to the following essentials: (1) Fire prevention, (2) Control of grazing, (3) Selective cutting, and (4) Reforestation.

Fire prevention.—Fire control is necessary not only to produce greater forest income but also to maintain maximum soil porosity and to achieve erosion control. There has been no organized fire protection in past years. Forest fires occur, but records of extent or damage are not available.

Brush burning, campers and hunters, incendiarism, smokers, and railroads are the most common causes of fires. Especial caution is necessary in spring and fall, for in those seasons the forest litter is dry, humidity is low, and winds are strong. Most fires occur early in spring before the trees are in full foliage and during the autumn after the fall of leaves.

Control of grazing.—Control of grazing is necessary to keep woodland soils porous and to control erosion. Animals trample and destroy the litter and pack down the soil. As a result, less water is absorbed and danger of erosion increases.

Experiments have shown that woodland grazing does not pay (*5*). The type of pasture obtainable from shaded soils beneath the trees is not of a quality or quantity that will keep livestock in good condition without supplementary feeding. Livestock tend to eat leaves, twigs, and young seedlings of trees when grass is scanty. The timber-producing capacity of the forest is gradually destroyed by the repeated browsing, which curtails tree reproduction so much that natural regeneration of the stand is prevented.

Selective cutting.—Proper harvesting of woodlands requires removal of culls and weed trees [6] so as to give the straight, tall, well-crowned trees, free of defect, a chance to grow to timber size more rapidly.

The cutover woodland in Henry County contains much cull timber that hinders the development of potential sawtimber trees. These culls and weed trees can be cut for fuel or pulpwood. After woodland has been cleared of culls and weed trees, selective cutting should be practiced; that is, the trees should be cut as they mature, not the whole stand at one time. The trees cut should be removed in such a way that damage to those left is kept at a minimum. Sprouts from cut hardwood stumps and other overtopping cull hardwoods ought to be removed to allow the wanted trees a share of the overhead light and an eventual position in the canopy. Sprouting may be prevented by poisoning low-grade standing timber with chemicals.

Selective cutting means cutting of trees according to stage of maturity of the individual tree, rather than the entire stand at one time. If generally practiced, selective cutting would greatly increase timber production on the large areas of forest land in the county.

The age and size at which the individual trees should be cut depends on several factors. The species of tree and the type of soil on which

[6] Culls are trees of commercial species that are unsound, crooked, short, bushy topped, or slow growing; weed trees are species having no commercial value.

it is growing affect the rate of growth and the ultimate size. The tree should be cut at the end of its period of most rapid and therefore most economical growth. Freedom from defect or disease affects the value of the finished lumber. Those trees not suitable for sawtimber, even if large enough, should be cut for other purposes.

On the better timber producing soils, as the Memphis, Lexington, and Ruston, and the better drained soils of the first bottoms, the suitable species should be allowed to reach sawtimber size.

On those upland soils where growing conditions are more difficult, good management would suggest harvesting "two-tie trees" rather than searching out every vigorously growing tree and cutting it for a "one-tie tree" just as soon as it attains the minimum size. A worthwhile goal is the growth of two-tie trees 16 inches in diameter 4½ feet above the ground in a period of 80 years or less, rather than the cutting of a one-tie, 12-inch tree that may require 60 years to grow.

On promising tie-producing areas we can reasonably expect a growing stock of 200 trees or more per acre under good management. These trees, in order to produce harvests at relatively short time intervals, could reasonably be apportioned through eight different age or size classes as follows: 0 to 2 inches, 2 to 4 inches, 4 to 6 inches, 6 to 8 inches, 8 to 10 inches, 10 to 12 inches, 12 to 14 inches,and 14 to 16 inches. Selective cutting of the 16-inch trees within a 10-year period would yield 25 two-tie trees, or even a perpetual annual harvest of 2½ trees, or 5 crossties, per acre.

Study, careful work, and a period of time are necessary to convert a poorly managed forest into a well-managed forest containing size classes approximating the ones named. Our field studies show that a tree 16 inches in diameter and of normal height can be grown in 80 years, or less time if local growing conditions are reasonably good Areas severely ravaged by fire and the peaks of ridges that have dry south and west exposures are not suitable for growth of good timber.

Reforestation.—On some of the cleared areas of the county, a suitable forest cover will establish itself if it is protected against fire and grazing by livestock. Planting is suggested for those areas that will not reforest through natural, or volunteer, reseeding. If seed trees are nearby and the soil is in a condition favorable for germination and survival of seedlings, planting is not required. In most places, particularly on the severely eroded soils, planting will be necessary.

It is very important that trees be selected that suit the local conditions of the planting site, including type of soil, drainage, degree of erosion, elevation, and exposure. Areas severely ravaged by fire and other very unfavorable growing sites may be planted to an adapted species of pine. Pine trees have been set on some of the severely eroded or gullied areas to stabilize erosion; kudzu and black locust have been set in a few places for the same purpose.

Generally, the severely eroded hilly and steep soils can be most economically reclaimed by planting to forest. Loblolly pine can be depended upon to revegetate these soils quickly and to control the loss of soil material through erosion. Wherever there is any surface soil remaining, the loblolly pine should respond with a rapid initial growth.

Although farmers many times specify locust because they need fence posts, pine is usually better for the severe growing conditions encountered on lands to be used for forest. On many soils black locust can be grown successfully in the well-drained, well-aerated material behind check dams.

Yellow-poplar has limited use; it can be planted in ravines and on northern and eastern exposures on deep, well-drained silty and sandy soils. Interplanting yellow-poplar in cutover forests on soils such as the Ruston, Memphis, and Lexington may be a good idea.

Tree planting includes such measures as breaking and mulching galled areas, building simple, low, check dams of brush in gullies, and plowing contour furrows. Landowners do the planting, but forest tree seedlings of suitable species can be obtained, often without cost, by consulting the office of the county agricultural agent.

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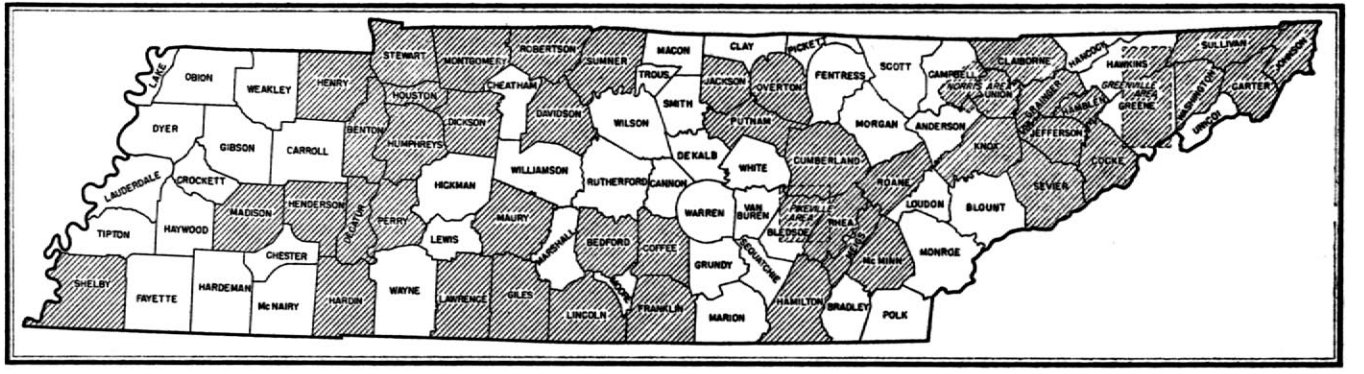

Areas surveyed in Tennessee shown by shading.

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

LEGEND SHEET
HENRY COUNTY - TENNESSEE

TENNESSEE AGRICULTURAL EXPERIMENT STATION
TENNESSEE VALLEY AUTHORITY

LEGEND

Al Almo silt loam	Bs Brandon silt loam, eroded undulating phase	Cf Center silt loam, undulating phase	Do Dulac silt loam, rolling phase	Fs Freeland silt loam, undulating phase	Gk Guin-Brandon soils, rolling phases	Hb Hatchie fine sandy loam, undulating phase	Hy Hymon and Beechy silt loams	Lj Lexington silt loam, eroded hilly phase	Lt Loring silt loam, level phase	Mg Memphis silt loam, eroded undulating phase	Pc Paden silt loam, eroded rolling phase	Ro Ruston fine sandy loam, eroded rolling phase	Td Tigrett silt loam
Bf Beechy fine sandy loam	Bt Brandon silt loam, rolling phase	Cg Center silt loam, eroded undulating phase	Dp Dulac silt loam, eroded rolling phase	Ft Freeland silt loam, eroded undulating phase	Gl Guin-Brandon soils, eroded rolling phases	Hc Hatchie silt loam, level phase	La Lax silt loam, undulating phase	Lk Lexington silty clay loam, severely eroded rolling phase	Lu Loring silt loam, undulating phase	Mh Memphis silt loam, rolling phase	Pd Paden silty clay loam, severely eroded rolling phase	Rp Ruston fine sandy loam, severely eroded rolling phase	Tf Tippah silt loam, eroded undulating phase
Bg Beechy loamy sand, overwash phase	Bu Brandon silt loam, eroded rolling phase	De Dexter fine sandy loam, hilly phase	Dr Dulac silty clay loam, severely eroded rolling phase	Fu Freeland silt loam, rolling phase	Gm Guin-Brandon soils, hilly phases	Hd Hatchie silt loam, undulating phase	Lb Lax silt loam, eroded undulating phase	Ll Lexington silty clay loam, severely eroded hilly phase	Lv Loring silt loam, eroded undulating phase	Mi Memphis silt loam, eroded rolling phase	Pr Providence silt loam, undulating phase	Rr Ruston fine sandy loam, hilly phase	Tg Tippah silt loam, rolling phase
Bh Beechy silt loam	Bw Brandon silty clay loam, severely eroded rolling phase	Df Dexter silt loam, undulating phase	Dt Dulac-Cuthbert complex, hilly phases	Fx Freeland silt loam, eroded rolling phase	Gn Guin-Brandon soils, eroded hilly phases	He Hatchie silt loam, eroded undulating phase	Lc Lax silt loam, rolling phase	Lm Lexington-Ruston soils, rolling phases	Lw Loring silt loam, rolling phase	Ml Memphis silty clay loam, severely eroded rolling phase	Ps Providence silt loam, eroded undulating phase	Rs Ruston fine sandy loam, eroded hilly phase	Th Tippah silt loam, eroded rolling phas
Bi Beechy silt loam, swamp phase	Bx Briensburg fine sandy loam	Dg Dexter silt loam, eroded undulating phase	Du Dulac-Cuthbert complex, eroded hilly phases	Fy Freeland silty clay loam, severely eroded rolling phase	Go Guin-Brandon soils, severely eroded hilly phases	Hh Henry silt loam	Ld Lax silty clay loam, severely eroded rolling phase	Ln Lexington-Ruston soils, eroded rolling phases	Lx Loring silt loam, eroded rolling phase	Mp Mines, pits, and dumps	Pt Providence silt loam, rolling phase	Rt Ruston fine sandy loam, severely eroded hilly phase	Ti Tippah silty clay loam, severely eroded rolling phase
Bm Bodine cherty silt loam, rolling phase	By Briensburg silt loam	Dh Dexter silt loam, rolling phase	Dv Dulac-Cuthbert complex, severely eroded hilly phases	Ga Greendale cherty silt loam	Gs Gullied land, Cuthbert and Dulac soil materials	Hl Hilly land, Coastal Plain material	Le Lexington silt loam, undulating phase	Lo Lexington-Ruston soils, severely eroded rolling phases	Ly Loring silty clay loam, severely eroded rolling phase	Ms Mountview silt loam, rolling shallow phase	Pu Providence silt loam, eroded rolling phase	Ru Ruston fine sandy loam, steep phase	
Bn Bodine cherty silt loam, hilly phase	Ca Calloway silt loam, level phase	Di Dexter silt loam, eroded rolling phase	Dx Dyer fine sandy loam	Gd Grenada silt loam, level phase	Gu Gullied land, Memphis soil material	Hm Hilly eroded land, Coastal Plain material	Lf Lexington silt loam, eroded undulating phase	Lp Lexington-Ruston soils, hilly phases	Ma Made land	Mt Mountview silt loam, eroded rolling shallow phase	Pw Providence silty clay loam, severely eroded rolling phase	Sa Shannon fine sandy loam	
Bo Bodine cherty silt loam, eroded hilly phase	Cb Calloway silt loam, undulating phase	Dk Dexter silty clay loam, severely eroded rolling phase	Dy Dyer silt loam	Ge Grenada silt loam, undulating phase	Gv Gullied land, Ruston soil material	Hr Hymon fine sandy loam	Lg Lexington silt loam, rolling phase	Lq Lexington-Ruston soils, eroded hilly phases	Mc Melvin and Beechy silt loams	Mv Mountview silt loam, hilly shallow phase	Rc Robertsville silt loam	Sb Shannon silt loam	
Bp Bodine cherty silt loam, steep phase	Cc Calloway silt loam, eroded undulating phase	Dm Dulac silt loam, undulating phase	En Ennis silt loam	Gf Grenada silt loam, eroded undulating phase	Gw Gully wash	Hs Hymon silt loam	Lh Lexington silt loam, eroded rolling phase	Lr Lexington-Ruston soils, severely eroded hilly phases	Me Memphis silt loam, level phase	Pa Paden silt loam, eroded undulating phase	Rh Routon and Henry silt loams	Ta Taft silt loam	
Br Brandon silt loam, undulating phase	Ce Center silt loam, level phase	Dn Dulac silt loam, eroded undulating phase	Fr Freeland silt loam, level phase	Gh Guin gravelly loam, steep phase	Ha Hatchie fine sandy loam, level phase	Hx Hymon and Beechy fine sandy loams	Li Lexington silt loam, hilly phase	Ls Lindside and Lobelville silt loams	Mf Memphis silt loam, undulating phase	Pb Paden silt loam, rolling phase	Rm Ruston fine sandy loam, rolling phase	Tc Tigrett fine sandy loam	

COLOR GROUPING

MANAGEMENT GROUP 1. - NEARLY LEVEL WELL-DRAINED ALLUVIAL SOILS

Ennis silt loam
Shannon fine sandy loam
Shannon silt loam

MANAGEMENT GROUP 2. - NEARLY LEVEL IMPERFECTLY DRAINED ALLUVIAL SOILS

Hymon fine sandy loam
Hymon silt loam
Hymon and Beechy fine sandy loams
Hymon and Beechy silt loams
Lindside and Lobelville silt loams

MANAGEMENT GROUP 3. - IMPERFECTLY TO WELL-DRAINED NEARLY LEVEL TO SLIGHTLY SLOPING COLLUVIAL-ALLUVIAL SOILS

Briensburg fine sandy loam
Briensburg silt loam
Greendale cherty silt loam
Tigrett fine sandy loam
Tigrett silt loam

MANAGEMENT GROUP 4. - WELL-DRAINED FRIABLE LEVEL TO UNDULATING TERRACE AND UPLAND SOILS

Brandon silt loam, undulating phase
Brandon silt loam, eroded undulating phase
Dexter silt loam, undulating phase
Dexter silt loam, eroded undulating phase
Lexington silt loam, undulating phase
Lexington silt loam, eroded undulating phase
Loring silt loam, level phase
Loring silt loam, undulating phase
Loring silt loam, eroded undulating phase
Memphis silt loam, level phase
Memphis silt loam, undulating phase
Memphis silt loam, eroded undulating phase

MANAGEMENT GROUP 5. - WELL-DRAINED FRIABLE ROLLING TERRACE AND UPLAND SOILS; NOT SEVERELY ERODED

Brandon silt loam, rolling phase
Brandon silt loam, eroded rolling phase
Dexter silt loam, rolling phase
Dexter silt loam, eroded rolling phase
Lexington silt loam, rolling phase
Lexington silt loam, eroded rolling phase
Lexington-Ruston soils, rolling phases
Lexington-Ruston soils, eroded rolling phases
Loring silt loam, rolling phase
Loring silt loam, eroded rolling phase
Memphis silt loam, rolling phase
Memphis silt loam, eroded rolling phase
Mountview silt loam, rolling shallow phase
Mountview silt loam, eroded rolling shallow phase

MANAGEMENT GROUP 6. - WELL-DRAINED FRIABLE ROLLING TERRACE AND UPLAND SOILS; SEVERELY ERODED

Brandon silty clay loam, severely eroded rolling phase
Dexter silty clay loam, severely eroded rolling phase
Lexington silty clay loam, severely eroded rolling phase
Lexington-Ruston soils, severely eroded rolling phases
Loring silty clay loam, severely eroded rolling phase
Memphis silty clay loam, severely eroded rolling phase

MANAGEMENT GROUP 7. - MODERATELY WELL DRAINED NEARLY LEVEL TO UNDULATING SILTPAN TERRACE AND UPLAND SOILS

Dulac silt loam, undulating phase
Dulac silt loam, eroded undulating phase
Freeland silt loam, level phase
Freeland silt loam, undulating phase
Freeland silt loam, eroded undulating phase
Grenada silt loam, level phase
Grenada silt loam, undulating phase
Grenada silt loam, eroded undulating phase
Lax silt loam, undulating phase
Lax silt loam, eroded undulating phase
Paden silt loam, eroded undulating phase
Providence silt loam, undulating phase
Providence silt loam, eroded undulating phase
Tippah silt loam, eroded undulating phase

MANAGEMENT GROUP 8. - MODERATELY WELL DRAINED ROLLING SILTPAN TERRACE AND UPLAND SOILS; NOT SEVERELY ERODED

Dulac silt loam, rolling phase
Dulac silt loam, eroded rolling phase
Freeland silt loam, rolling phase
Freeland silt loam, eroded rolling phase
Lax silt loam, rolling phase
Paden silt loam, rolling phase
Paden silt loam, eroded rolling phase
Providence silt loam, rolling phase
Providence silt loam, eroded rolling phase
Tippah silt loam, rolling phase
Tippah silt loam, eroded rolling phase

MANAGEMENT GROUP 9. - MODERATELY WELL DRAINED ROLLING SILTPAN TERRACE AND UPLAND SOILS; SEVERELY ERODED

Dulac silty clay loam, severely eroded rolling phase
Freeland silty clay loam, severely eroded rolling phase
Lax silty clay loam, severely eroded rolling phase
Paden silty clay loam, severely eroded rolling phase
Providence silty clay loam, severely eroded rolling phase
Tippah silty clay loam, severely eroded rolling phase

MANAGEMENT GROUP 10. - IMPERFECTLY DRAINED LEVEL TO UNDULATING SILTPAN TERRACE AND UPLAND SOILS

Calloway silt loam, level phase
Calloway silt loam, undulating phase
Calloway silt loam, eroded undulating phase
Center silt loam, level phase
Center silt loam, undulating phase
Center silt loam, eroded undulating phase
Hatchie fine sandy loam, level phase
Hatchie fine sandy loam, undulating phase
Hatchie silt loam, level phase
Hatchie silt loam, undulating phase
Hatchie silt loam, eroded undulating phase
Taft silt loam

MANAGEMENT GROUP 11. - WELL DRAINED FRIABLE HILLY TERRACE AND UPLAND SOILS; NONCHERTY OR GRAVELLY AND NOT SEVERELY ERODED

Dexter fine sandy loam, hilly phase
Lexington silt loam, hilly phase
Lexington silt loam, eroded hilly phase
Lexington-Ruston soils, hilly phases
Lexington-Ruston soils, eroded hilly phases

MANAGEMENT GROUP 12. - POORLY DRAINED NEARLY LEVEL TERRACE AND UPLAND SOILS

Almo silt loam
Henry silt loam
Robertsville silt loam
Routon and Henry silt loams

MANAGEMENT GROUP 13. - POORLY DRAINED FRIABLE NEARLY LEVEL ALLUVIAL AND GENTLY SLOPING COLLUVIAL SOILS

Beechy fine sandy loam
Beechy loamy sand, overwash phase
Beechy silt loam
Beechy silt loam, swamp phase
Dyer fine sandy loam
Dyer silt loam
Melvin and Beechy silt loams

MANAGEMENT GROUP 14. - WELL-DRAINED TO EXCESSIVELY DRAINED FRIABLE CHERTY, GRAVELLY, AND SANDY ROLLING TO HILLY UPLAND SOILS; SEVERELY ERODED SILTY HILLY UPLAND SOILS

Bodine cherty silt loam, rolling phase
Bodine cherty silt loam, hilly phase
Bodine cherty silt loam, eroded hilly phase
Guin-Brandon soils, rolling phases
Guin-Brandon soils, eroded rolling phases
Guin-Brandon soils, hilly phases
Guin-Brandon soils, eroded hilly phases
Lexington silty clay loam, severely eroded hilly phase
Lexington-Ruston soils, severely eroded hilly phases
Mountview silt loam, hilly shallow phase
Ruston fine sandy loam, rolling phase
Ruston fine sandy loam, eroded rolling phase
Ruston fine sandy loam, hilly phase
Ruston fine sandy loam, eroded hilly phase

MANAGEMENT GROUP 15. - MODERATELY WELL DRAINED HILLY SOILS; WELL-DRAINED TO EXCESSIVELY DRAINED CHERTY, GRAVELLY, OR SANDY HILLY AND STEEP UPLAND SOILS AND MISCELLANEOUS LAND TYPES

Bodine cherty silt loam, steep phase
Dulac-Cuthbert complex, hilly phases
Dulac-Cuthbert complex, eroded hilly phases
Dulac-Cuthbert complex, severely eroded hilly phases
Guin gravelly loam, steep phase
Guin-Brandon soils, severely eroded hilly phases
Gullied land, Cuthbert and Dulac soil materials
Gullied land, Memphis soil material
Gullied land, Ruston soil material
Gully wash
Hilly land, Coastal Plain material
Hilly eroded land, Coastal Plain material
Made land
Mines, pits, and dumps
Ruston fine sandy loam, severely eroded rolling phase
Ruston fine sandy loam, severely eroded hilly phase
Ruston fine sandy loam, steep phase

NOTE:

For soils which lie below the shore line of the Kentucky Reservoir (359 foot elevation) soil boundaries are shown by dashed black lines with soil symbols in black. The area appears in water tint blue rather than in soil colors shown in the above groups.

Soils which lie entirely within the reservoir and not listed in the above groups are:

Eg Egam silty clay loam
Hu Huntington fine sandy loam
Hv Huntington silt loam
Sc Sequatchie fine sandy loam
Wo Wolftever silt loam
Wp Wolftever silty clay loam, eroded phase

CONVENTIONAL SIGNS

CULTURE
(Printed in black)

City or Village, Roads, Buildings, Wharves, Jetties, Breakwater, Levee, Lighthouse, Fort

Secondary roads, Trails

Railroads

Bridges, Ferry

Railroad crossings

Ford, Dam, Sawmill, Windmill

Boundary lines

School, Church, Creamery, Cemeteries

Boundary lines

Triangulation station, Boundary monument, Oil or Gas wells

U. S. Township and Section lines, Recovered corners

Forest fire station, Airway beacon, Oil or Gas tanks

Transmission line, Oil or Gas pipe line

Mine or Quarry; Gravel pit, Rock outcrop, Made land

Soil boundaries; Stony, Gravelly, and Cherty areas

DRAINAGE
(Printed in blue)

Streams, Springs, Wells, Flowing wells

Lakes, Ponds, Intermittent lakes

Unsurveyed and Intermittent streams

Water pipe lines, Canals, Ditches, Flumes

Swamp, Salt marsh

Submerged marsh, Tidal flats

The above signs are in current use on the soil maps. Variations from this usage appear in some maps of earlier dates.

ACCELERATED EROSION

S Moderate sheet erosion
SS Severe sheet erosion
G Moderate gully erosion
GG Severe gully erosion
SG Moderate sheet and gully erosion
U Uneroded Spot
Gully

Inspection and correlation by J. W. Moon, Regional Analyst, Soil Uses and Productivity.
Soils surveyed 1942-47 by Robert Wildermuth and Howard M. Smith, U. S. Department of Agriculture, and F. R. Austin, L. E. Odom, J. R. Overton, and A. E. Townsend, Tennessee Agricultural Experiment Station.

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Map constructed by Cartographic Division, Soil Conservation Service, USDA, from 1937 aerial photographs.
Soils surveyed on 1937 aerial photographs.
Polyconic projection, 1927 North American datum.
10000-foot grid based on Tennessee (State) rectangular coordinate system.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL MAP

HENRY COUNTY - TENNESSEE

SHEET NO. 1

TENNESSEE AGRICULTURAL EXPERIMENT STATION
TENNESSEE VALLEY AUTHORITY

1 270 000 FEET — 1 300 000 FEET

88°30'00" — 27'30" — 25' — 88°22'30"

36°30'00" — 770 000 FEET

GRAVES CO. — CALLOWAY CO. — KENTUCKY

Crossland

Oak Grove Church

Jones Mill

Cottagegrove

Tennessee Creek — North Fork — Obion River — Clear Creek — Walnut Creek — Mill Creek

INDIAN MOUND

Mp Clay Pit

DISTRICT NO 15

DISTRICT NO 6

DISTRICT NO 5

DISTRICT NO 2

36°22'30" — 740 000 FEET

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SCALE 1:15,840

1 0 1 Mile

5000 0 5000 Feet

☆ U. S. GOVERNMENT PRINTING OFFICE: 1957 O—387866

SHEET INDEX

Insert 1 2 3 4 5 6 7 8 9 10 11 12

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL MAP
HENRY COUNTY - TENNESSEE
SHEET NO. 2

TENNESSEE AGRICULTURAL EXPERIMENT STATION
TENNESSEE VALLEY AUTHORITY

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SCALE 1:15,840

1 0 1 Mile

5000 0 5000 Feet

☆ U. S. GOVERNMENT PRINTING OFFICE: 1957 O—387066

SHEET INDEX

	1	2	3	4
5	6	7	8	9
	10	11	12	

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL MAP

HENRY COUNTY - TENNESSEE

SHEET NO. 3

TENNESSEE AGRICULTURAL EXPERIMENT STATION
TENNESSEE VALLEY AUTHORITY

1 340 000 FEET — 1 370 000 FEET

88°15'00" — 88°07'30"

36°30'00"

CALLOWAY CO — KENTUCKY

Freeland
Mt Pleasant
Blood River Church
Buchanan
Mt Zion Church
Owens Hill
Pine Hill School
OLIVER CEMETERY
BETHEL CEMETERY
KING CEMETERY
HEGLAR CHAPEL CEMETERY
Beaverdam Church
Oak Grove School
Delno School

DISTRICT NO 8
DISTRICT NO 7
DISTRICT NO 10
DISTRICT NO 13

770 000 FEET — 730 000 FEET

27'30" — 25'

36°22'30"

12'30" — 10'

79

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SCALE 1:15,840

1 0 1 Mile

5000 0 5000 Feet

SHEET INDEX

	1	2	3	4
5	6	7	8	9
	10	11	12	

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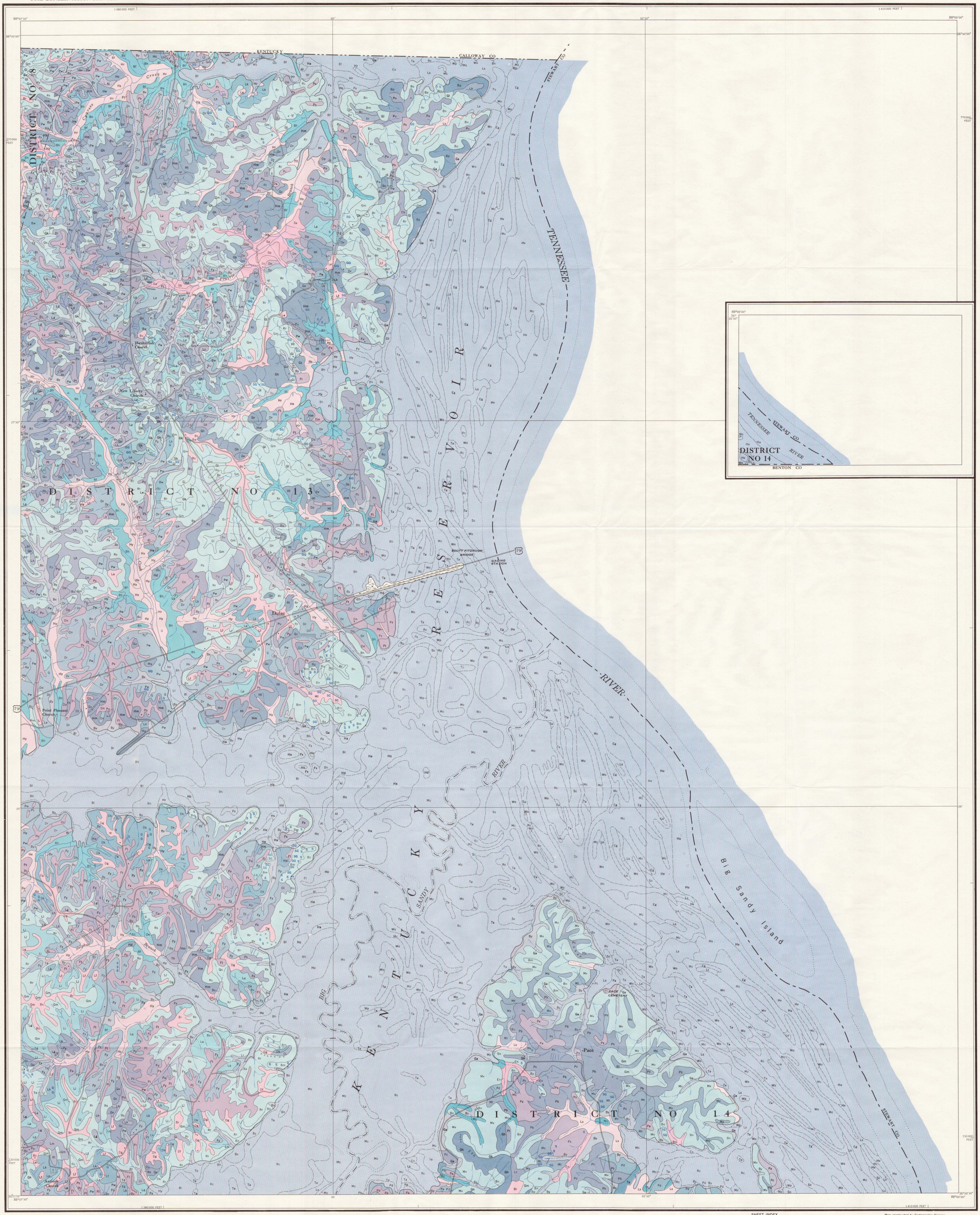
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL MAP
HENRY COUNTY - TENNESSEE
SHEET NO. 4

TENNESSEE AGRICULTURAL EXPERIMENT STATION
TENNESSEE VALLEY AUTHORITY



Inspection and correlation by J. W. Moon, Regional Analyst, Soil Uses and Productivity.
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SCALE 1:15,840

1 — 0 — 1 Mile

5 000 — 0 — 5 000 Feet

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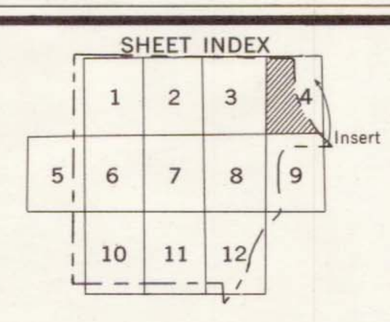

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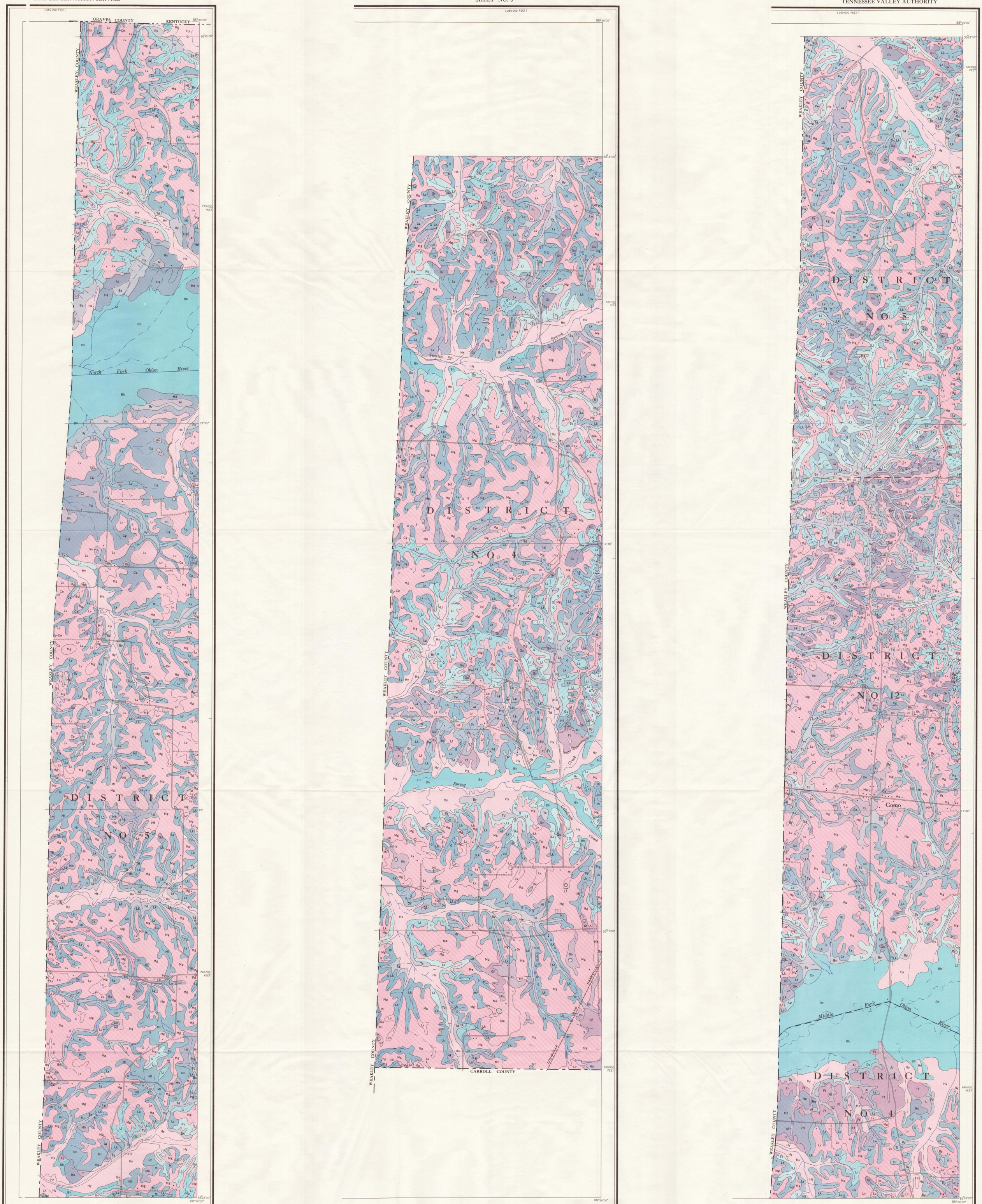
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL MAP
HENRY COUNTY - TENNESSEE
SHEET NO. 5

TENNESSEE AGRICULTURAL EXPERIMENT STATION
TENNESSEE VALLEY AUTHORITY



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Soil Uses and Productivity.
Soils surveyed 1942-47 by Robert Wildermuth and Howard M. Smith,
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SCALE 1:15,840

1 0 1 Mile

5000 0 5000 Feet

SHEET INDEX

Insert	1	2	3	4
	5	6	7	8	9
Insert	10	11	12	

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(State) rectangular coordinate system.

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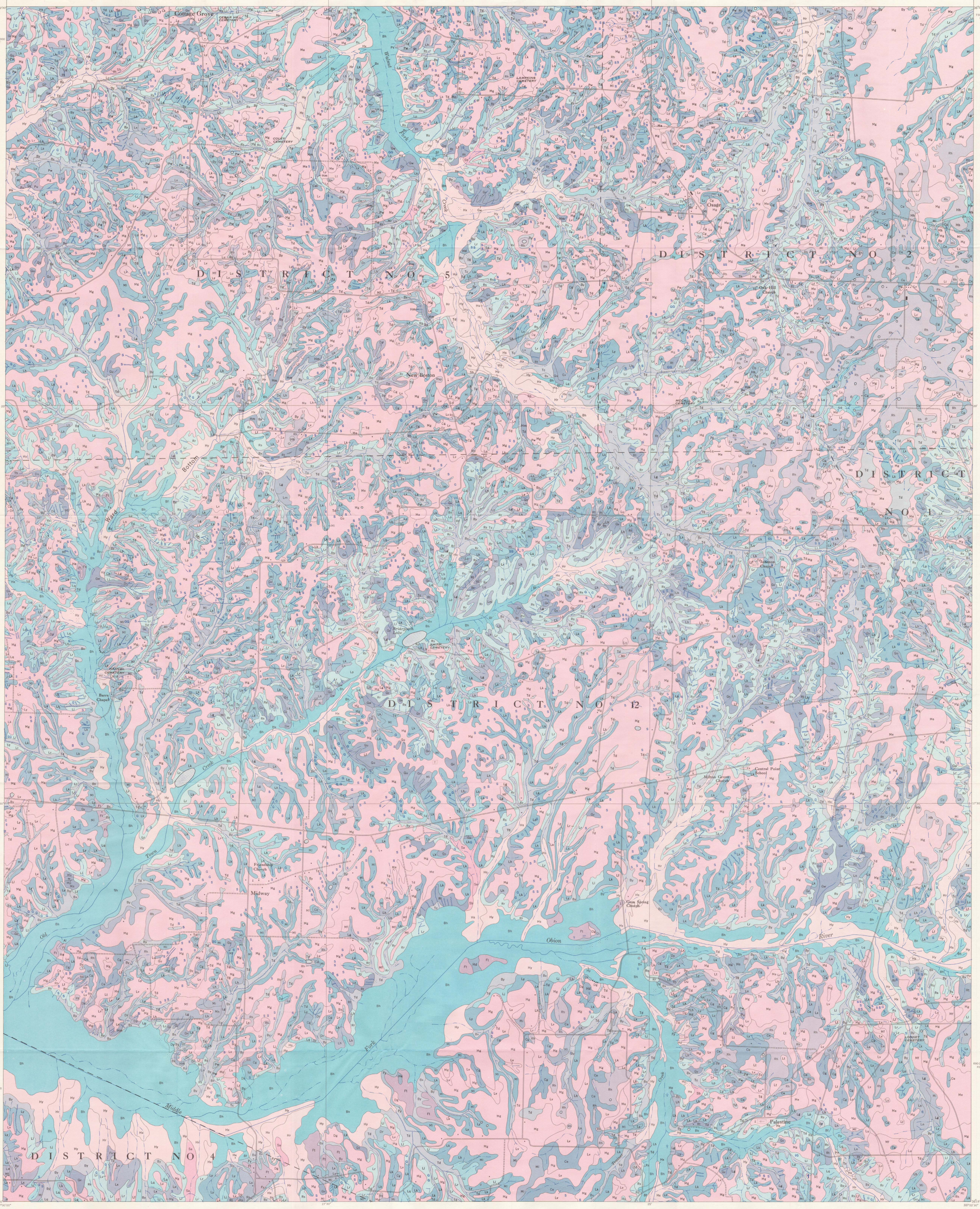
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL MAP

HENRY COUNTY - TENNESSEE

SHEET NO. 6

TENNESSEE AGRICULTURAL EXPERIMENT STATION
TENNESSEE VALLEY AUTHORITY



Inspection and correlation by J. W. Moon, Regional Analyst, Soil Uses and Productivity.
Soils surveyed 1942-47 by Robert Wildermuth and Howard M. Smith, U. S. Department of Agriculture, and F. R. Austin, L. E. Olsom, J. R. Overton, and A. E. Townsend, Tennessee Agricultural Experiment Station.

SCALE 1:15,840

1 0 1 Mile

5000 0 5000 Feet

SHEET INDEX

	1	2	3	4
5	6	7	8	9
	10	11	12	

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL MAP
HENRY COUNTY - TENNESSEE
SHEET NO. 7

TENNESSEE AGRICULTURAL EXPERIMENT STATION
TENNESSEE VALLEY AUTHORITY

DISTRICT NO 2

DISTRICT NO 7

DISTRICT NO 1

DISTRICT NO 3

Whitlock
Bird Creek Church
Chapel Hill
Porter Court
PARIS
India
Hancock
Snider Cemetery
Edgar Cemetery
Hansel Cemetery
Pleasant Grove Church
Yandyke Grove Church
New Hope Church
Fowler School
Clifty School
Indian Bend Lake
Bevill Cemetery
Allman Cemetery
County Farm

Bird Creek
Freeman Creek
Obion River
Middle Fork Obion River
Nelson Creek
Turkey Creek
Horse Creek
Clifty Creek
Barley Pork
Thompson Creek
Chandler Ditch
Rotherwood Creek
Lawrence Branch
Crawfish Branch
Town Branch

Louisville and Nashville
St Louis and San Francisco

88°22'30"
88°15'00"
36°22'30"
36°15'00"
20'
17'30"
730000 FEET
720000 FEET
690000 FEET
1310000 FEET
1330000 FEET
1300000 FEET

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SCALE 1:15,840
1 0 1 Mile
5 0 5000 Feet

SHEET INDEX

	1	2	3	4
5	6	7	8	9
	10	11	12	

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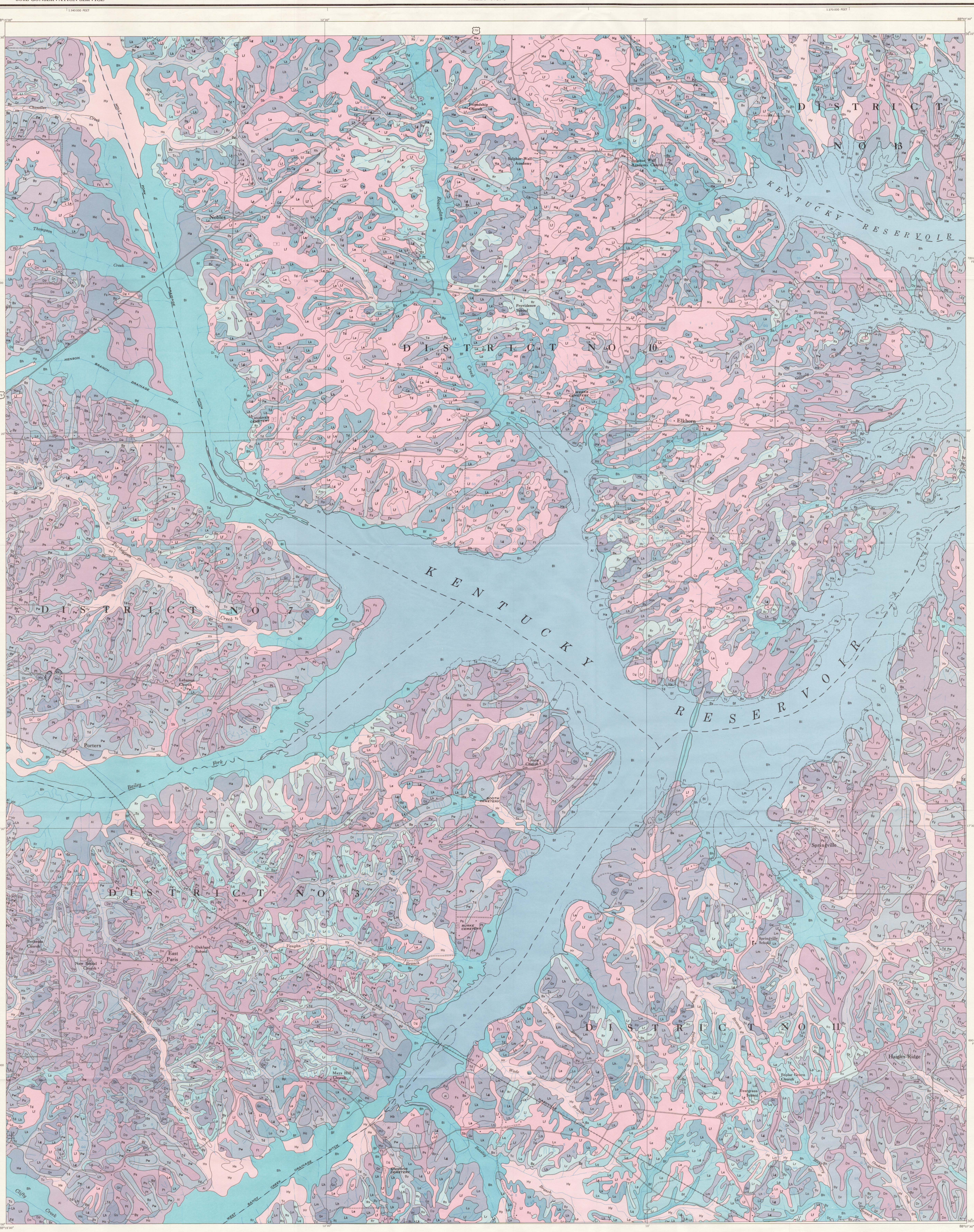
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL MAP

HENRY COUNTY - TENNESSEE

SHEET NO. 8

TENNESSEE AGRICULTURAL EXPERIMENT STATION
TENNESSEE VALLEY AUTHORITY



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SCALE 1:15,840

1 0 1 Mile

5000 0 5000 Feet

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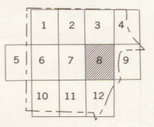

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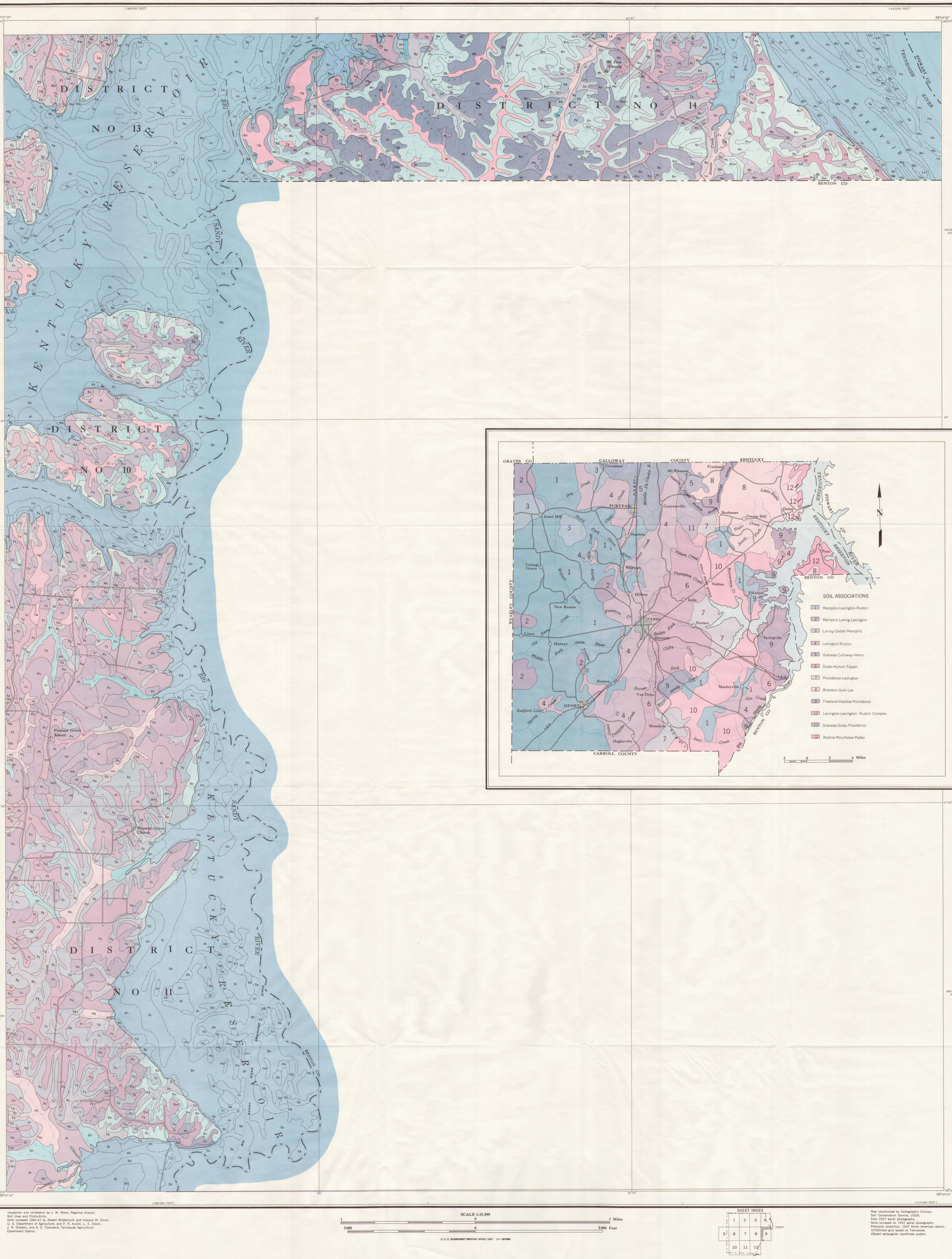
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL MAP
HENRY COUNTY - TENNESSEE
SHEET NO. 9

TENNESSEE AGRICULTURAL EXPERIMENT STATION
TENNESSEE VALLEY AUTHORITY



Inspection and correlation by J. W. Moon, Regional Analyst,
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U. S. Department of Agriculture, and F. R. Austin, L. E. Odom,
J. R. Overton, and A. E. Townsend, Tennessee Agricultural
Experiment Station.

SCALE 1:15,840
1 0 1 Miles
5000 0 5000 Feet

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SHEET INDEX

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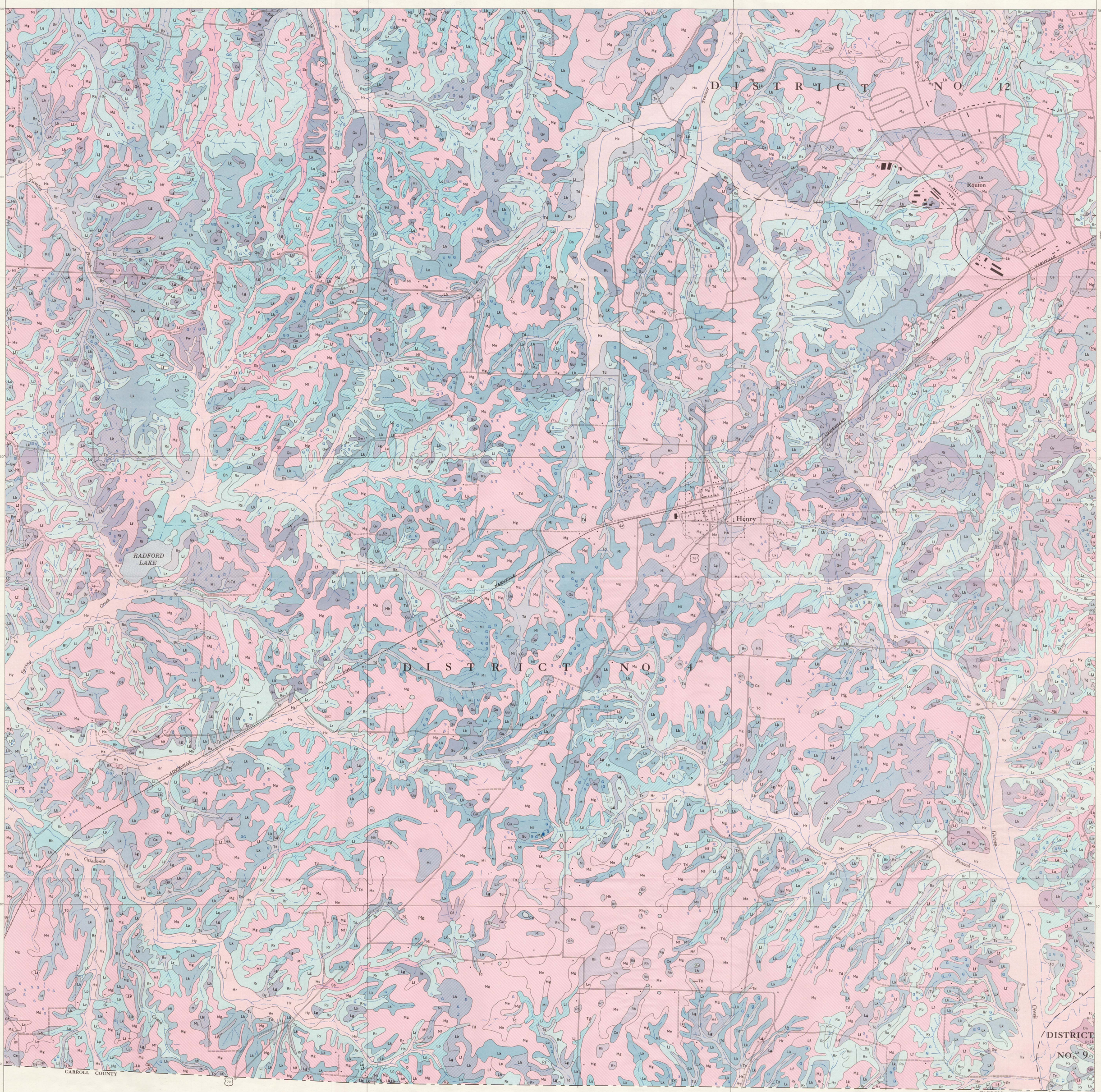
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL MAP

HENRY COUNTY - TENNESSEE

SHEET NO. 10

TENNESSEE AGRICULTURAL EXPERIMENT STATION
TENNESSEE VALLEY AUTHORITY



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SCALE 1:15,840

1 0 1 Mile

5000 0 5000 Feet

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SHEET INDEX

	1	2	3	4
5	6	7	8	9
Insert	10	11	12	

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL MAP

HENRY COUNTY - TENNESSEE

SHEET NO. 11

TENNESSEE AGRICULTURAL EXPERIMENT STATION
TENNESSEE VALLEY AUTHORITY

1 300 000 FEET — 1 330 000 FEET

88°22'30" — 20' — 17'30" — 88°15'00"

36°15'00"

680 000 FEET

DISTRICT NO 12

DISTRICT NO 3

DISTRICT NO 4

DISTRICT NO 9

Nashville and Dover

Routon

Spring Hill Church

Van Dyke

Mansfield

Mansfield School

New Hope

Shiloh Church

Bomar Creek

Barnes Fork

Barnes Drainage Canal

Ditch

Sandy West Creek

Sandy Creek

Bear Creek

Panther Creek

Brewer Creek

Pettyjohn Creek

Guinn Creek

CARROLL COUNTY

640 000 FEET

36°07'30"

1 300 000 FEET — 1 330 000 FEET

Inspection and correlation by J. W. Moon, Regional Analyst, Soil Uses and Productivity.
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SCALE 1:15,840

1 0 1 Mile

5000 0 5000 Feet

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SHEET INDEX

	1	2	3	4
5	6	7	8	9
	10	11	12	

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL MAP

HENRY COUNTY - TENNESSEE

SHEET NO. 12

TENNESSEE AGRICULTURAL EXPERIMENT STATION
TENNESSEE VALLEY AUTHORITY

DISTRICT NO 3

DISTRICT NO 11

DISTRICT NO 9

DISTRICT NO 11

Manleyville

Spring Creek Church

Spring Creek School

Pentecostal Church

McDavid School

CARROLL CO

BENTON CO

Inspection and correlation by J. W. Moon, Regional Analyst, Soil Uses and Productivity.
Soils surveyed 1942-47 by Robert Wildermuth and Howard M. Smith, U. S. Department of Agriculture, and F. R. Austin, L. E. Odom, J. R. Overton, and A. E. Townsend, Tennessee Agricultural Experiment Station.

SCALE 1:15,840

1 0 1 Mile

5000 0 5000 Feet

SHEET INDEX

1	2	3	4	
5	6	7	8	9
	10	11	12	Insert

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Soil	Map symbol	Management group	Use capability group	Slope range	Drainage	Surface soil color	Subsoil		Parent rock or parent materials	Remarks
							Color	Consistence		
				Percent						
Almo silt loam	Al	12	IVw	0- 2	Poor	Gray, light gray, or brownish gray	Light gray	Friable	Mixed alluvium composed of loess and Coastal Plain material.	"White crawfish land."
Beechy silt loam	Bh	13	IVw	0- 2	Poor	Gray or brownish gray	Gray, light gray, or very pale brown	Friable	Same	Frequently flooded.
Swamp phase	Bi	13	VIIw	0- 2	Very poor	Gray or light brownish gray	Light gray	Moderately friable	Same	Under water much of time.
Beechy fine sandy loam	Bf	13	IVw	0- 2	Poor	Light brownish gray or gray	Light gray, gray, or very pale brown	Very friable	Same	Frequently flooded.
Beechy loamy sand, overwash phase	Bg	13	VIIs	0- 2	Poor	Brownish gray, gray, or grayish yellow	Same	Very friable	Same	10 to 20 inches of loose sand over Beechy soil.
Bodine cherty silt loam: Rolling phase	Bm	14	IVe	3-12	Good to excessive	Light brownish gray to grayish brown	Light yellowish brown, yellowish brown, or brownish yellow.	Friable	Residuum of very cherty limestone or chert.	Very cherty and infertile.
Hilly phase	Bn	14	VIe	12-25	Good to excessive	Same	Same	Friable	Same	Same.
Eroded hilly phase	Bo	14	VIe	12-25	Good to excessive	Same	Same	Friable	Same	Same.
Steep phase	Bp	15	VIIe	25+	Excessive	Same	Same	Friable	Same	Same.
Brandon silt loam: Undulating phase	Br	4	IIe	2- 5	Good	Brown to grayish brown	Yellowish brown to strong brown	Friable	Thin loess over gravel	
Eroded undulating phase	Bs	4	IIe	2- 5	Good	Grayish brown, brown, and yellowish brown	Same	Friable	Same	
Rolling phase	Bt	5	IIIe	5-12	Good	Grayish brown to brown	Same	Friable	Same	
Eroded rolling phase	Bu	5	IIIe	5-12	Good	Brown, grayish brown, or yellowish brown	Same	Friable	Same	
Brandon silty clay loam, severely eroded rolling phase.	Bw	6	IVe	5-12	Good	Same	Same	Friable	Same	
Brienaburg silt loam	By	3	IIw	1- 5	Imperfect	Grayish brown or brown	Brownish gray to light brown, mottled	Friable	Mixed local alluvium or colluvium from loess and Coastal Plain material.	
Brienaburg fine sandy loam	Bx	3	IIw	1- 5	Imperfect	Grayish brown to yellowish brown	Same	Friable	Same	
Calloway silt loam: Level phase	Ca	10	IIIw	0- 2	Imperfect	Brownish gray, grayish brown, or pale brown	Brownish yellow, pale yellow, or light yellowish brown.	Friable	Deep loess	Hardpan at depth of about 2 feet.
Undulating phase	Cb	10	IIIw	2- 5	Imperfect	Brownish gray to grayish brown	Same	Friable	Deep loess	Same.
Eroded undulating phase	Cc	10	IIIw	2- 5	Imperfect	Brownish gray to light yellowish brown	Brownish yellow to pale yellow	Friable	Deep loess	Same.
Center silt loam: Level phase	Ce	10	IIIw	0- 2	Imperfect	Brown to grayish brown	Brown or yellowish brown to light yellowish brown.	Friable	Deep loess	
Undulating phase	Cf	10	IIIw	2- 5	Imperfect	Same	Same	Friable	Deep loess	
Eroded undulating phase	Cg	10	IIIw	2- 5	Imperfect	Brown to yellowish brown	Same	Friable	Deep loess	
Dexter silt loam: Undulating phase	Df	4	IIe	2- 5	Good	Grayish brown or brown	Reddish yellow to yellowish red or reddish brown.	Friable	Mixed old alluvium or thin loess over Coastal Plain alluvium.	
Eroded undulating phase	Dg	4	IIe	2- 5	Good	Grayish brown to yellowish brown	Yellowish red or reddish brown	Friable	Same	
Rolling phase	Dh	5	IIIe	5-12	Good	Grayish brown or brown	Reddish yellow to yellowish red or reddish brown.	Friable	Same	
Eroded rolling phase	Di	5	IIIe	5-12	Good	Grayish brown to yellowish brown	Yellowish red or reddish brown	Friable	Same	
Dexter silty clay loam, severely eroded rolling phase.	Dk	6	IVe	5-12	Good	Grayish brown to yellowish brown or yellowish red.	Same	Friable	Same	
Dexter fine sandy loam, hilly phase	De	11	VIe	12-20	Good	Grayish brown or brown	Reddish yellow to yellowish red or reddish brown.	Friable	Same	
Dulac silt loam: Undulating phase	Dm	7	IIe	2- 5	Moderately good	Pale brown to grayish brown	Yellowish brown to brownish yellow	Friable	Thin loess layer over slowly permeable Coastal Plain material.	Hardpan at depth of about 2 feet.
Eroded undulating phase	Dn	7	IIe	2- 5	Moderately good	Pale brown or grayish brown to yellowish brown.	Same	Friable	Same	Same.
Rolling phase	Do	8	IIIe	5-12	Moderately good	Pale brown to grayish brown	Yellowish brown or brownish yellow	Friable	Same	Same,
Eroded rolling phase	Dp	8	IIIe	5-12	Moderately good	Pale brown or grayish brown to yellowish brown.	Same	Friable	Same	Same,
Dulac silty clay loam, severely eroded rolling phase.	Dr	9	IVe	5-12	Moderately good	Grayish brown, pale brown, and yellowish brown.	Same	Friable	Same	Same.
Dulac-Cuthbert complex: Hilly phases	Dt	15	VIe	12-25	Moderately good and good.	An intricate association of Dulac and Cuthbert soils.			Loess and heavy textured Coastal Plain materials.	
Eroded hilly phases	Du	15	VIe	12-25	Same	Same			Same	
Severely eroded hilly phases	Dv	15	VIe	12-25	Same	Same			Same	Severely injured by erosion.
Dyer silt loam	Dy	13	IVw	1- 5	Poor	Light brownish gray	Light brownish gray to light gray	Friable	Mixed local alluvium and colluvium, loess, and Coastal Plain material.	Mainly seepy foot slopes.
Dyer fine sandy loam	Dx	13	IVw	1- 5	Poor	Brownish gray or pale brown	Same	Friable	Same	Mainly seepy foot slopes.
Egam silty clay loam	Eg	.....	IIw	0- 3	Moderately good	Dark brown to dark grayish brown	Dark grayish brown to dark yellowish brown.	Moderately compact	Mixed alluvium, mainly limestone material.	Now flooded by Kentucky Reservoir.
Ennis silt loam	En	1	I	0- 2	Good	Grayish brown, brown, or dark brown	Brown or pale brown	Friable	Alluvium, mainly cherty limestone material.	
Freeland silt loam: Level phase	Fr	7	IIs	0- 2	Moderately good	Grayish brown to pale brown	Yellowish brown or brownish yellow	Friable	Old mixed alluvium or thin loess over Coastal Plain alluvium.	Siltpan at depth of about 2 feet.
Undulating phase	Fs	7	IIe	2- 5	Moderately good	Same	Same	Friable	Same	Same.
Eroded undulating phase	Ft	7	IIe	2- 5	Moderately good	Grayish brown, pale brown, or yellowish brown.	Same	Friable	Same	Same.
Rolling phase	Fu	8	IIIe	5-12	Moderately good	Grayish brown to pale brown	Same	Friable	Same	Same.
Eroded rolling phase	Fx	8	IIIe	5-12	Moderately good	Grayish brown, pale brown, or yellowish brown.	Same	Friable	Same	Same.
Freeland silty clay loam, severely eroded rolling phase.	Fy	9	IVe	5-12	Moderately good	Same	Same	Friable	Same	Same.
Greendale cherty silt loam	Ga	3	IIs	1- 5	Good	Grayish brown to brown	Pale brown, light yellowish brown, or yellowish brown.	Friable	Young local alluvium or colluvium, mainly cherty limestone material.	Occurs in small areas.
Grenada silt loam: Level phase	Gd	7	IIs	0- 2	Moderately good	Grayish brown or brown	Yellowish brown to brownish yellow	Friable	Deep loess underlain by slowly permeable Coastal Plain material.	Hardpan at depth of about 30 inches.
Undulating phase	Ge	7	IIe	2- 5	Moderately good	Same	Same	Friable	Same	Same.
Eroded undulating phase	Gf	7	IIe	2- 5	Moderately good	Grayish brown to yellowish brown	Same	Friable	Same	Same.
Guin gravelly loam, steep phase	Gh	15	VIIe	25+	Excessive	Light brownish gray, pale brown, or grayish brown.	Yellowish brown or brownish yellow	Loose, very friable	Gravel, mainly chert	Very droughty soil.
Guin-Brandon soils: Rolling phases	Gk	14	IIIe	5-12	Excessive and good	A complex association of well-drained silty and excessively drained gravelly soils			Shallow loess and gravel	
Eroded rolling phases	Gl	14	IIIe	5-12	Excessive and good	Same			Same	
Hilly phases	Gm	14	VIe	12-25	Excessive and good	Same			Same	
Eroded hilly phases	Gn	14	VIe	12-25	Excessive and good	Same			Same	
Severely eroded hilly phases	Go	15	VIe	12-25	Excessive and good	Same			Same	Severely injured by erosion.
Gullied land: Cuthbert and Dulac soil materials	Gs	15	VIIe	5-30	A network of gullies in Dulac and Cuthbert soils that has largely destroyed the soil profiles					
Memphis soil material	Gu	15	VIIe	5-12	A network of gullies in Memphis and Lexington soils that has largely destroyed the soil profiles					
Ruston soil material	Gv	15	VIIe	5-30	A network of gullies in Ruston soils that has largely destroyed the soil profiles					
Gully wash	Gw	15	VIIs	0- 3	Very recent local alluvial or colluvial material washed from gullied areas, chiefly sand					Very unproductive.
Hatchie silt loam: Level phase	Hc	10	IIIw	0- 2	Imperfect	Light brownish gray or pale brown	Light yellowish brown or pale yellow	Friable	Old mixed alluvium or shallow loess over Coastal Plain alluvium.	Hardpan at depth of about 2 feet.
Undulating phase	Hd	10	IIIw	2- 5	Imperfect	Same	Same	Friable	Same	Same.
Eroded undulating phase	He	10	IIIw	2- 5	Imperfect	Light brownish gray or pale brown to light yellowish brown.	Same	Friable	Same	Same.
Hatchie fine sandy loam: Level phase	Ha	10	IIIw	0- 2	Imperfect	Light brownish gray or pale brown	Same	Friable	Same	Same.
Undulating phase	Hb	10	IIIw	2- 5	Imperfect	Same	Same	Friable	Same	Same.
Henry silt loam	Hh	12	IVw	0- 2	Poor	Light gray	Light gray	Compact	Deep loess	"White or crawfish land."
Hilly land, Coastal Plain material	Hl	15	VIe	12-35	A land type consisting of a very complex association of a large number of soils from Coastal Plain material					
Hilly eroded land, Coastal Plain material	Hm	15	VIe	12-30	Same					
Huntington silt loam	Hv	.....	I	0- 3	Good	Brown or dark brown	Brown or light brown	Friable	Mixed alluvium, mainly limestone material.	Now flooded by Kentucky Reservoir.
Huntington fine sandy loam	Hu	.....	I	0- 3	Good	Same	Same	Friable	Same	Same.
Hymon silt loam	Hs	2	IIw	0- 2	Imperfect	Brown to grayish brown	Light yellowish brown to brownish gray, splotched.	Friable	Mixed alluvium composed of loess and Coastal Plain material.	
Hymon fine sandy loam	Hr	2	IIw	0- 2	Imperfect	Same	Same	Friable	Same	
Hymon and Beechy silt loams	Hy	2	IIIw	0- 2	Imperfect and poor	Areas of Hymon and Beechy soils undifferentiated in mapping. May be a complex in places				
Hymon and Beechy fine sandy loams	Hx	2	IIIw	0- 2	Imperfect and poor	Same				
Lax silt loam: Undulating phase	La	7	IIe	2- 5	Moderately good	Grayish brown to pale brown	Yellowish brown or brownish yellow	Friable	Shallow loess over gravel	Hardpan at depth of about 22 inches.
Eroded undulating phase	Lb	7	IIe	2- 5	Moderately good	Grayish brown or pale brown to yellowish brown.	Same	Friable	Same	Same.
Rolling phase	Lc	8	IIIe	5-12	Moderately good	Grayish brown or pale brown	Same	Friable	Same	Same.
Lax silty clay loam, severely eroded rolling phase.	Ld	9	IVe	5-12	Moderately good	Pale brown, grayish brown, or yellowish brown.	Same	Friable	Same	Same.
Lexington silt loam: Undulating phase	Le	4	IIe	2- 5	Good	Grayish brown or brown	Strong brown to reddish brown or yellowish red.	Friable	Shallow loess over sand	
Eroded undulating phase	Lf	4	IIe	2- 5	Good	Brown to strong brown	Same	Friable	Same	
Rolling phase	Lg	5	IIIe	5-12	Good	Grayish brown or brown	Same	Friable	Same	
Eroded rolling phase	Lh	5	IIIe	5-12	Good	Brown to strong brown	Same	Friable	Same	
Hilly phase	Li	11	VIe	12-25	Good	Brown or grayish brown	Same	Friable	Same	
Eroded hilly phase	Lj	11	VIe	12-25	Good	Brown to strong brown	Same	Friable	Same	
Lexington silty clay loam: Severely eroded rolling phase	Lk	6	IVe	5-12	Good	Grayish brown, brown, or strong brown	Same	Friable	Same	Severely injured by erosion.
Severely eroded hilly phase	Ll	14	VIIe	12-25	Good	Grayish brown, brown, and strong brown	Same	Friable	Same	Same.
Lexington-Ruston soils: Rolling phases	Lm	5	IIIe	5-12	Good	A complex association of well-drained silty and sandy soils				
Eroded rolling phases	Ln	5	IIIe	5-12	Good	Same				
Severely eroded rolling phases	Lo	6	IVe	5-12	Good	Same				Severely injured by erosion.
Hilly phases	Lp	11	VIe	12-25	Good	Same				Very susceptible to erosion.
Eroded hilly phases	Lq	11	VIe	12-25	Good	Same				Same.
Severely eroded hilly phases	Lr	14	VIIe	12-25	Good	Same				Extremely susceptible to further erosion.
Lindside and Lobelville silt loams	Ls	2	IIw	0- 2	Imperfect	Lindside and Lobelville soils undifferentiated in mapping; may be a complex in places				
Loring silt loam: Level phase	Lt	4	I	0- 2	Same	Brown or grayish brown	Yellowish brown to strong brown	Friable	Deep loess	Weak hardpan at depth of about 30 inches.
Undulating phase	Lu	4	IIe	2- 5	Moderately good to good.	Same	Same	Friable	Deep loess	Same.
Eroded undulating phase	Lv	4	IIe	2- 5	Same	Grayish brown, brown, or strong brown	Same	Friable	Deep loess	Same.
Rolling phase	Lw	5	IIIe	5-12	Same	Brown or grayish brown	Same	Friable	Deep loess	Same.
Eroded rolling phase	Lx	5	IIIe	5-12	Same	Grayish brown, brown, or strong brown	Same	Friable	Deep loess	Same.
Loring silty clay loam, severely eroded rolling phase.	Ly	6	IIIe	5-12	Same	Grayish brown, brown, and yellowish brown	Same	Friable	Deep loess	Same.
Made land	Ma	15	.....	Areas covered to variable depth with material, mainly soil material, by man						
Melvin and Beechy silt loams	Mc	13	IVw	0- 2	Poor	Melvin and Beechy soils undifferentiated in mapping				
Memphis silt loam: Level phase	Me	4	I	0- 2	Good	Brown	Reddish brown or yellowish red	Friable	Deep loess over sand	
Undulating phase	Mf	4	IIe	2- 5	Good	Brown	Same	Friable	Same	
Eroded undulating phase	Mg	4	IIe	2- 5	Good	Brown or strong brown	Same	Friable	Same	
Rolling phase	Mh	5	IIIe	5-12	Good	Brown	Same	Friable	Same	
Eroded rolling phase	Mi	5	IIIe	5-12	Good	Brown or strong brown	Same	Friable	Same	
Memphis silty clay loam, severely eroded rolling phase.	Ml	6	IIIe	5-12	Good	Brown, strong brown, and yellowish red	Same	Friable	Same	
Mines, pits, and dumps	Mp	15	.....	Areas on which the soil profile has been removed by man						
Mountview silt loam: Rolling shallow phase	Ms	5	IIIe	5-12	Good	Pale brown to grayish brown	Yellowish brown to brownish yellow	Friable	Shallow loess over cherty limestone residuum.	
Eroded rolling shallow phase	Mt	5	IIIe	5-12	Good	Pale brown to yellowish brown	Same	Friable	Same	
Hilly shallow phase	Mv	14	IVe	12-25	Good	Pale brown to grayish brown	Same	Friable	Same	
Paden silt loam: Eroded undulating phase	Pa	7	IIe	2- 5	Moderately good	Grayish brown, pale brown, or yellowish brown.	Same	Friable	Shallow loess over mixed alluvium that includes limestone material.	
Rolling phase	Pb	8	IIIe	5-12	Moderately good	Grayish brown or pale brown	Same	Friable	Same	
Eroded rolling phase	Pc	8	IIIe	5-12	Moderately good	Grayish brown, pale brown, or yellowish brown.	Same	Friable	Same	
Paden silty clay loam, severely eroded rolling phase.	Pd	9	IVe	5-12	Moderately good	Grayish brown to yellowish brown	Same	Friable	Same	
Providence silt loam: Undulating phase	Pr	7	IIe	2- 5	Moderately good	Pale brown to grayish brown	Strong brown or yellowish brown	Friable	Shallow loess over sandy Coastal Plain material.	Weak siltpan at depth of about 2 feet.
Eroded undulating phase	Ps	7	IIe	2- 5	Moderately good	Pale brown to yellowish brown	Same	Friable	Same	Same.
Rolling phase	Pt	8	IIIe	5-12	Moderately good	Pale brown to grayish brown	Same	Friable	Same	
Eroded rolling phase	Pu	8	IIIe	5-12	Moderately good	Pale brown to yellowish brown	Same	Friable	Same	
Providence silty clay loam, severely eroded rolling phase.	Pw	9	IVe	5-12	Moderately good	Grayish brown, pale brown, or yellowish brown.	Same	Friable	Same	
Robertsville silt loam	Rc	12	IVw	0- 2	Poor	Gray or light brownish gray	Light gray	Friable	Old mixed alluvium, chiefly limestone material.	Very compact layer at depth of about 20 inches.
Routon and Henry silt loams	Rh	12	IVw	0- 2	Poorly drained upland soils undifferentiated in mapping that differ in presence or absence of hardpan layer					
Ruston fine sandy loam: Rolling phase	Rm	14	IIIe	5-12	Good	Pale brown to light yellowish brown	Yellowish red to red	Friable	Coastal Plain sands	
Eroded rolling phase	Ro	14	IIIe	5-12	Good	Same	Same	Friable	Coastal Plain sands	
Severely eroded rolling phase	Rp	15	IVe	5-12	Good	Light yellowish brown to yellowish red	Same	Friable	Coastal Plain sands	Extremely erosive.
Hilly phase	Rr	14	VIe	12-25	Good	Pale brown to light yellowish brown	Same	Friable	Coastal Plain sands	
Eroded hilly phase	Rs	14	VIe	12-25	Good	Same	Same	Friable	Coastal Plain sands	Extremely erosive.
Severely eroded hilly phase	Rt	15	VIIe	12-25	Good	Light yellowish brown to yellowish red	Same	Friable	Coastal Plain sands	Extremely erosive.
Steep phase	Ru	15	VIIe	25+	Good	Pale brown to light yellowish brown	Same	Friable	Coastal Plain sands	
Sequatchie fine sandy loam	Sc	.....	IIe	2- 5	Good	Grayish brown to brown	Yellowish brown to strong brown	Friable	Highly mixed alluvium, including sandstone and limestone materials.	Now flooded by Kentucky Reservoir.
Shannon silt loam	Sb	1	I	0- 2	Good	Same	Brown to yellowish brown	Friable	Mixed alluvium composed of loess and Coastal Plain materials.	
Shannon fine sandy loam	Sa	1	I	0- 2	Good	Brown to brownish gray	Yellowish brown or light yellowish brown	Very friable	Same	
Taft silt loam	Ta	10	IIIw	0- 2	Imperfect	Light brownish gray or light brown	Yellowish brown to pale yellow	Friable	Highly mixed alluvium, chiefly limestone materials.	Practically all flooded by Kentucky Reservoir.
Tigrett silt loam	Td	3	IIe	1- 5	Good	Brown to dark grayish brown	Brown to yellowish brown	Friable	Young local alluvium or colluvium from loess and Coastal Plain materials.	
Tigrett fine sandy loam	Tc	3	IIe	1- 5	Good	Brown, yellowish brown, or grayish brown	Same	Friable to very friable	Same	
Tippah silt loam: Eroded undulating phase	Tf	7	IIe	2- 5	Moderately good	Pale brown to grayish brown or yellowish brown.	Yellowish brown to brownish yellow	Friable	Shallow loess over Coastal Plain clays	Hardpan at depth of about 20 to 24 inches.
Rolling phase	Tg	8	IIIe	5-12	Moderately good	Pale brown to grayish brown	Same	Friable	Same	Same.
Eroded rolling phase	Th	8	IIIe	5-12	Moderately good	Pale brown to grayish brown or yellowish brown.	Same	Friable	Same	Same.
Tippah silty clay loam, severely eroded rolling phase.	Ti	9	IVe	5-12	Moderately good	Brownish gray, pale brown, and yellowish brown.	Same	Friable	Same	Same.
Wolftever silt loam	Wo	.....	IIe	2- 5	Moderately good	Brown or grayish brown	Same	Moderately compact	Old alluvium, chiefly limestone material.	Now flooded by Kentucky Reservoir.
Wolftever silty clay loam, eroded phase	Wp	.....	IIe	2- 5	Moderately good	Brown to yellowish brown	Same	Moderately compact	Same	Same.